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Morphology, international legal status, life cycle of artificial islands and installations within the international law of the sea. Towards an “imperative” technical, technological and legal unification effort for the coming years

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Morphology, international legal status, life cycle of artificial islands and installations within the international law of the sea. Towards an "imperative" technical, technological and legal unification effort for the coming years

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Abstract: When we talk about artificial islands and installations we mean the involvement of several sciences that deal with issues of materials, architecture, morphology mainly external to form an international framework, that is important from the perspective of international law and the law of the sea. The life cycle, use, the attempt to understand the technical elements from a legal perspective, the relationship with coastal states and technological evolution are issues that are taken into account for the present research and study. Issues under examination and understanding remain the political practice of states and from the private side the formation of the rules of use and installation. The coherence or not at the international level for radical

overturns and applications of international regulations and what kinds of interpretations we can have, are also subject of analysis of the present study. The present and future challenges for institutional issues through an adaptation regime ensures the safe presence in the maritime space for their basic use and not the point of decommissioning, as well as the conversion, relocation of such an installation to other territorial waters.

Keywords: Technical Islands and Installations (TII); UNCLOS; ITLOS, ICJ, ASEAN; UN; IMO; continental shelf; high seas; Exclusive Economic Zones; safety zones; semi-permanent installations; national sovereign zone; coastal state; baseline; South China Sea; reefs; oil platform; delimitation; territorial zone; territorial sea; contiguous zone; hydrocarbon; international seabed authority; very large floating structures; sea level rise; islands in international law; international law; floating cities; microstates; right of hot pursuit; law of the sea; baseline; territorial sea; zone of national sovereignty; zones of national jurisdiction.

Introduction

When we talk about artificial islands[1] we refer to human constructions and installations in marine spaces. They have a structural and temporal character and are remote from the coastline (Phylactopoulos, 1972)[2]. The primary basic parameters are their contact with the seabed (Charles, 1967) and their presence above the sea surface.

We can say that they are divided into certain categories, such as artificial islands that have natural materials on them, artificial installations for the placement of pylons, either made of cement or metal, technical installations with mixed techniques such as soil and pylons, and artificial installations that are intended for navigation, i.e. semi-fixed platforms (Soons, 1974; Vidas, Freestone, 2022; Chen, Xu, 2022).

The Technical Islands and Installations (hereinafter TII) have as their main purpose the service of man, although the problems are many such as great depths, distance from land and violent natural phenomena, that prevent the possibility of their implementation[3]. Their use has to do with economic exploitation, research, public uses, military use as well as the

1https://en.wikipedia.org/wiki/List_of_artificial_islands

2Phylactopoulos affirms that: "(…) obvious similarity between alluvions and installations is that they are both products of human ingenuity. They are also both, in a relative sense, recent phenomena. They did not always exist the way natural islands always existed (…) man-made alluvions and installations, therefore, share the common characteristic that they may appear at man's discretion in places where nothing was there before but an expanse of sea (…)".

3https://en.wikipedia.org/wiki/Artificial_island

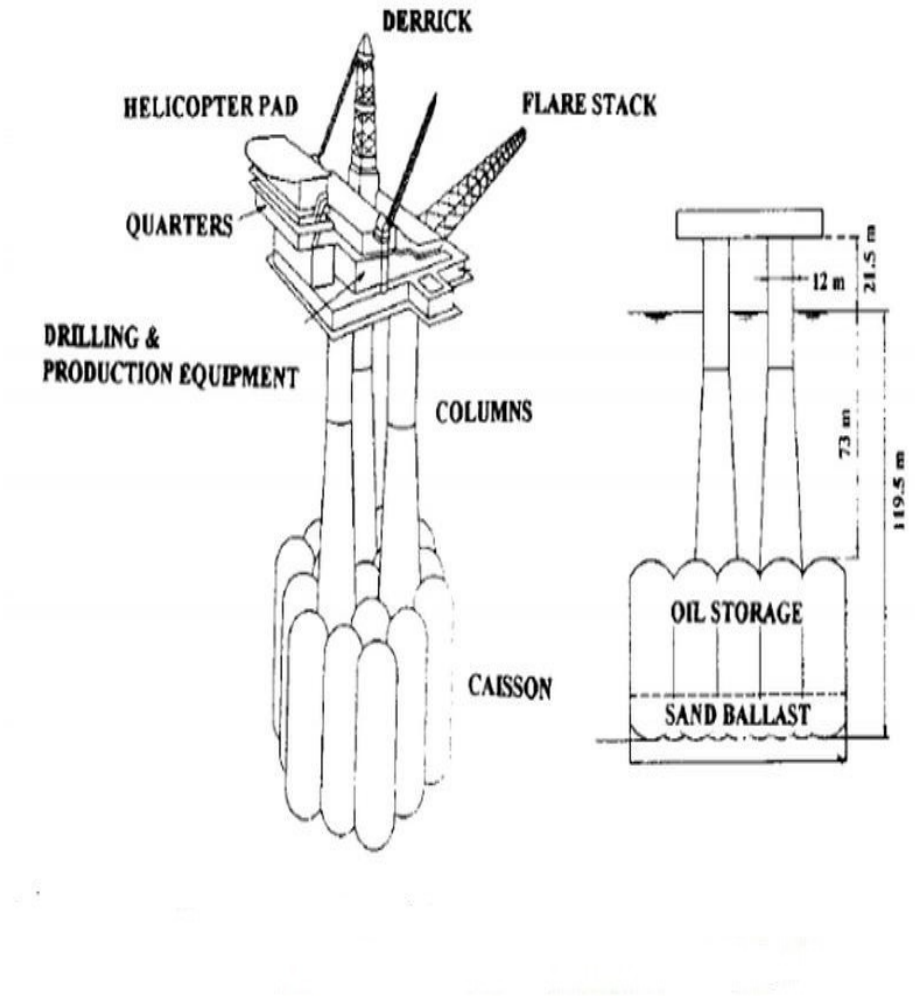
combination of all these use cases, where the creation of the main purpose, within a marine space, is often difficult but not impossible (Rothwell, 2022).

Mather (Mather, 2000) divides artificial islands into Offshore Structures. He classifies all types of Artificial Installations[4], as well as the Offshore Installations, i.e. other infrastructures that have an auxiliary character, such as Accommodation, Caisson, Wellheads elements that have a purely structural and auxiliary role in the operation of the installation such as pipelines, accommodation compartments and the relevant mooring.

Chakrabarti in a clearer way tries to analyze (Chakrabarti, 2005) the category of Offshore Structures into two subcategories: a. Bottom-Supported Structures and b. Floating Offshore Structures where any placement elements are considered integrated and not separate. The main classification criterion is the relative method of support used, and is further classified into groups, such as: 1. Bottom-Supported Fixed Structures which includes Jacket Structures, Gravity Based Structures, Jack-up Structures, etc., 2. Compliant Structures i.e. Compliant Towers, Guyed Towers and Articulated Towers, 3. Floating Structures i.e. Spar Platforms, Ship-shape Floating Production, Storage and Offloading Units, Buoyant Towers, Tension Leg Platforms, etc.

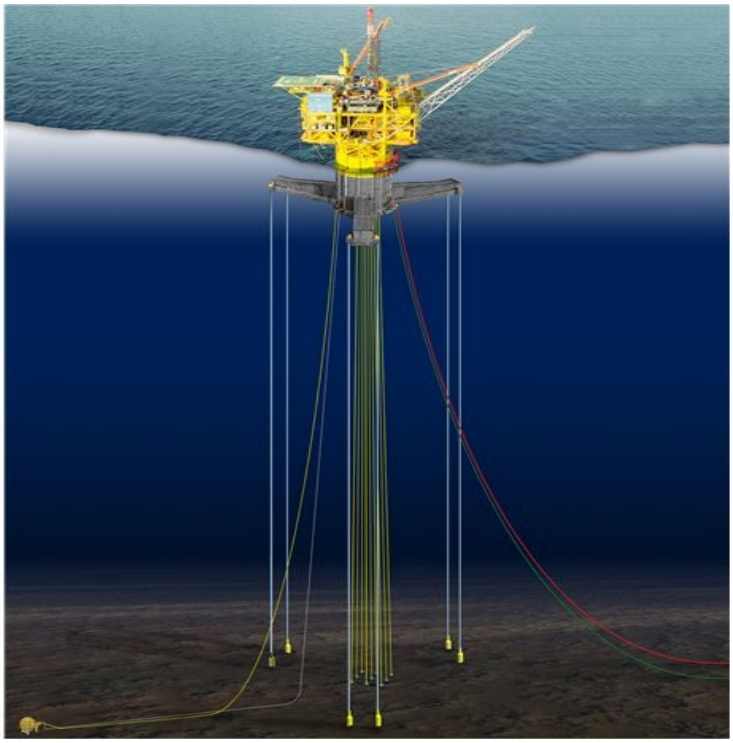
4Fixed Steel Structures, Concrete Gravity Base, Tension Leg Platforms, Jack-ups, Floating Production Systems.

Fig. 1: Example of gravity based structure



Source:http://matdl.org/failurecases/Other_Failure_Cases Sleipner_A.html

Fig. 2: Example of floatting structure



Source: www.DrillingsFormula.com

Li and Li make another form of categorization in UNESCO (Li, Li, 2000) since they refer to Marine Structures, which include Artificial Islands, i.e. the installations that have a relative appearance in the coastal zone. The relative categorization, according to Chakrabarti, has to do with Coastal Structures, Offshore Structures and Deep Ocean Structures. These are: a.

Fixed Structures, which include Gravity Type Breakwaters, Jacket Platforms, Artificial Islands etc., b. Movable Structures which have to do with Jack-up Structures, Semi-submersibles, Floating Production, Storage and Offloading Units, etc., and c. Complimentary Structures such as Guyed Structures, Tension Leg Platforms etc.

We are talking about a relative diversity of TII where the construction material, location, depth, buoyancy for the support method, the installations, the structures, platforms, towers, islands with the exception of islands have a non-homogeneous content. These terms are equivalent to classification criteria and with the construction material of the structure, as a factor that can change the form of TII, while the form of permanence of the relative presence on the seabed is different. We are talking about categories related to: a. Artificial Islands, b. Fixed Installations and C. Semi-fixed Installations and Hybrid Structures, where some common elements coexist and it is difficult to integrate them into any categories as well as to create legal problems.

The basic classification seems to have to do with the permanence of the construction in the sea space and the time duration it will have (Esmaeili, 2001), as a necessary element for the demand for energy resources, reconstruction and the disasters it may create. In recent years, the drilling to greater depths for the creation of Semi-Fixed Installations, the

exploitation of subsea deposits has had a specific role in the spread and evolution of TII technology (Chakrabarti, 2005)[5]. The development of technology for the exploitation of hydrocarbons and the exploration for the relative exploitation of natural resources is a reality of evolution for TII as well (Chakrabarti, 2005)[6].

Each of their legal regimes constitutes a branch of the law of the sea that has to do with the obligations of adjacent states and third states in relation to zones of national jurisdiction and the international seabed. Many times the lack of know-how and the absence of legal coverage that is located near the coastline is a subject of discussion mainly since the 3 nm of the Territorial Zone (Wilder, 1993) has been a subject of friction with oil companies in America in the past.

Specifically, we know the proclamation 2667, of President H. Truman[7], which opened the basis for new relevant activities in areas that are outside national sovereignty. These are zones, where modern maritime law is based and developed.

In 1947 a platform was created by Kerr-McGee Oil Industries

5According to Chakrabarti: "(…) since 1947, more than 10,000 offshore platforms of various types and sizes have been constructed and installed worldwide (...)"

6According to Chakrabarti: "(...) the majority of offshore structures support the exploration and production of oil and gas, other major structures, e.g. for harnessing power from the sea, offshore bases, offshore airports are also coming into existence. The design of these structures uses the same principles (…)".

7 President of the United States of America, Proclamation 2667, Policy of the United States With Respect to the Natural Resources of the Subsoil and Sea Bed of the Continental Shelf, September 28th 1945.

located 10.5 nm from the coast of Louisiana and at a depth of six meters. These are the first oil companies, where they started hesitantly and continued over time[8].

What is the life cycle of artificial islands and installations?

The distinction of the life cycle is divided into certain successive stages. The stage of creation, use and decommissioning. In parallel, an IIS can change uses for the duration of its life. These are operations that have to do with cost and with the relevant choices. The degree of knowledge and flexibility should be high from the beginning to the end of the operation.

Where a TII will be created has to do with the nationality, the process and the location as well as the future use of the relevant marine space. The most important of all is the stage of use which has to do with the operational life and the related choices such as abandonment, change of use and location. The rules are in a composition between international and national with the ultimate aim of regulating and the technical details of the processes, activities with a competitive and conflictual character for the use of the marine space (Maes, 2008).

The disputes deal with accidents, natural hazards and the amount of money that can come from private bodies, that is needed for the setting up and use. Financing through public

8National Commission on the BP deepwater horizon oil spill and offshore drilling, A brief history of offshore oil drilling staff working paper, no 1, 2010, 2ss.

enterprises, know-how, construction work through a consortium of enterprises for the delivery of the project concerns the responsibility and operation of decommissioning.

The life cycle is related to the ultimate purpose of the TII. The concept of life cycle is not the same as the operational life. By the concept of life cycle we mean the moment that has to do with the end of existence that does not hide dangers for navigation, the environment and other uses that have to do with the maritime space. With the operational life, the construction has to do with the purpose for which it has been constructed and does not include only the structural reasons but also the economic, social, environmental ones.

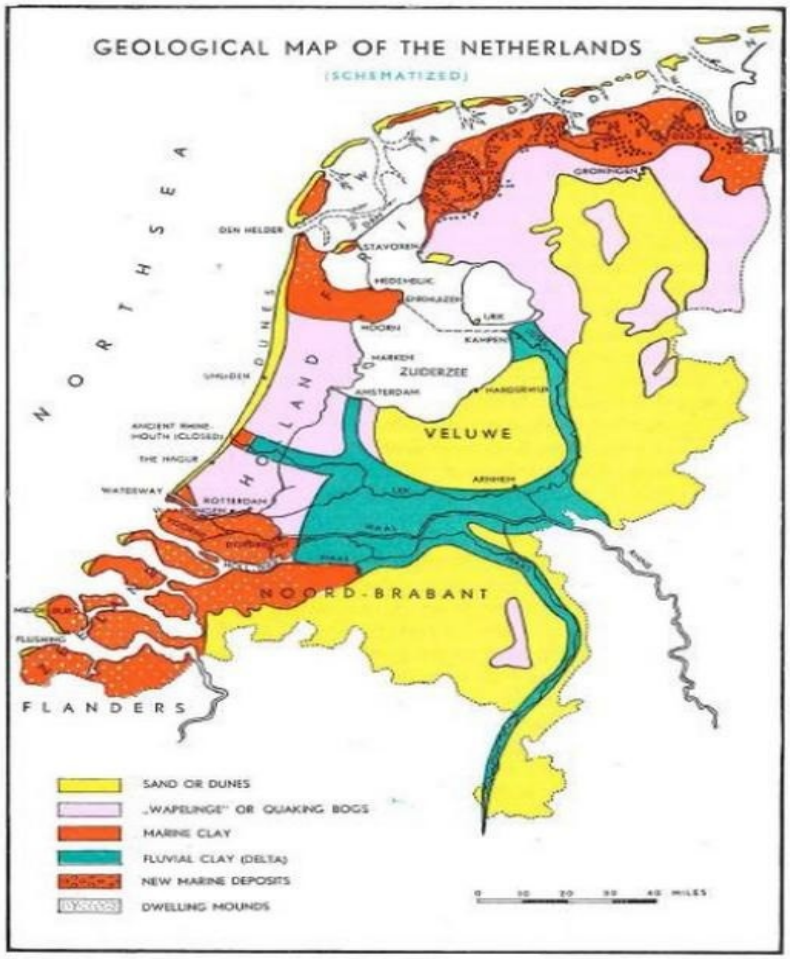
Artificial Islands, for example Friesland, have a lifespan of over 2,000 years and Artificial Installations have a lifespan of only a few decades[9]. The lifespan of the installation and its use is associated with high costs that are incurred by services offered for purposes other than those originally designed. Metaphorically, we can say that the IIs are floating cities that live through work, recreation with small or large groups, such as the Hibernia field mining installation in the North Atlantic, which has permanently housed around 190 people. In parallel,

9Depending on the size and where it is placed an average Installation (ie sea column depth and wave exposure) has a lifetime of about 20-30. With proper maintenance and replacement of stressed parts this time period can be extended. Committee on Disposition of Offshore Platforms, Marine Board, Commission on Engineering and Technical Systems, National Research Council, Disposal of Offshore Platforms, National Academy Press, Washington DC, 1985, 8-10.

artificial islands have been built in the Persian Gulf. They host several thousand people for the ultimate purpose of recreation as well as a permanent installation, such as Salahuddin with a large capacity of hosting more than 500,000 people[10]. One of the purposes is to serve the needs of the communities that have to do with their activities and their relative survival. Technological developments are intertwined with energy needs, namely renewable energy sources and the production of drinking water in a scientific community (Davidson, 1984) that over time presents several plans that have to do with the use and goal of the TII[11].

10 http://www.hibernia.ca/
11 http://www.seasteading.org/

Map 1: Geographical representation of land reclamation projects in Friesland



Source: van Veen, J., *Dredge, Drain, Reclaim. The Art of a Nation*, 5th ed., Martinus Nijhoff, The Hague, 1962, p. 17.

The construction materials also concern the corresponding legal status, the construction characteristics, the use through physical constraints and anthropogenic limits where the height of the sea column is important for the TII to be located near the coastline and at low depths of 550 meters, such as for example the pumping of hydrocarbons that deals with the Baldplate field and a foundation at a depth exceeding 580 meters as well as the Petronius at a depth of 535 meters where it is located in the Gulf of Mexico with deeper installations[12], while others have an anchorage at a depth that is around 2,500 meters (Cogliati-Bantz, 2016; Duy Phan, Ngoc Nguyen, 2018; Afzal, Tahir, Al-Ghamdi, 2022)[13].

The volume is important for the research, morphology and

12 http://www.offshore-technology.com/features/featureinto-the-abyss-the-worlds-deepest-offshore-oil-rigs

13 It is about the Perdido hydrocarbon drilling facility which is anchored in the Gulf of Mexico and at a depth of 2,450 meters (Assembling deepest offshore platform: https://www.shell.com/what-we-do/major-projects/perdido.html#:~:text=Perdido%20is%20the%20world's%20deepest,water%20oil%20and%20gas%20recovery. We also mention a greater anchoring depth where it is around 2,150 meters and in the same area we also have the Atlantis installation (Into the abyss-the world's deepest offshore oil rigs, http://www.offshore-technology.com/features/featureinto-the-abyss-the-worlds-deepest-offshore-oil-rigs). The construction is from the Chinese side with a relative installation HYSY 981 which is anchored at a depth of 1,500 meters and in the South China Sea which is designed for a relative depth of 3,000 meters. China's Offshore Move to Drilling Independence: CNOOC's HYSY 981 Rig Spuds In, http://gcaptain.com/chinas-move-energy-independence). In parallel, the average depth limit for the world's oceans has to do with the Woods Hole Oceanographic Institution which is calculated at 3,682.2 meters (WHOI Study Calculates Volume and Depth of the World's Oceans: https://www.whoi.edu/press-room/news-release/whoi-study-calculates-volume-and-depth-of-the-worlds-oceans/#:~:text=The%20study's%20calculation%20of%20the,%2C%20engineering%2C%20and%20higher%20education.

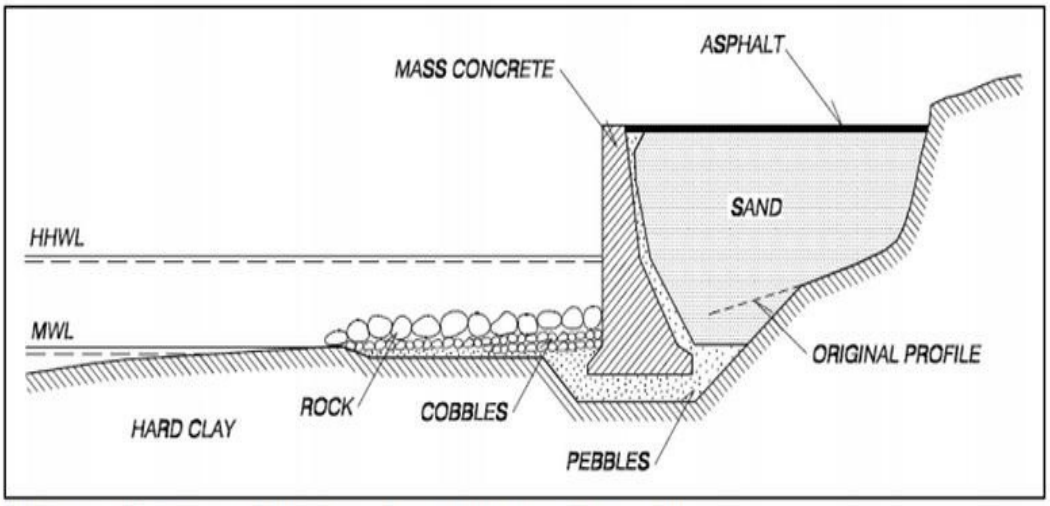
composition of the seabed and the related subsoil. The materials used in the seabed have to do with the morphology, soil composition, weaknesses and foundation techniques (Will, 1999) or even with the relative reinforcement of the Kansai airport as an artificial island (Furudoi, 2005). The volume in the sea at a distance from the coastline must have above all a sense of calm waters that are protected from winds and currents.

The legal framework and the new use in the location and in the international seabed, such as the distance from the main coastline, deals with the relative capacity, which has to do with the supplies of the operation of the installation, the promotion of the production products, to assist in emergency situations as well as for the more general use of boats and helicopters adjacent to the TII installation (Paik, Thayamballi, 2007).

Information outside the maritime space allows to talk about the existence of artificial islands and lakes that were in France since the mid-18th century as well as about related installations with similar characteristics that have been used since 1890 in Lake Ohio in the USA[14].

14Ohio Offshore Wells, http://aoghs.org/offshore-technology-history/ohio-offshore-wells/

Fig. 3:Types of elements for use in TII



Source: US Army Corps of Engineers, *Coastal Engineering Manual-Part VI*, EM 110-2-1100, 2002, p. VI-2-13.

The seabed and the limitation of the relative distance as well as the origin for the construction and operation of the TII may have effects on other elements with a negative character at all times and negatively affect the marine space and the relative protection of the parties concerned. The sea is an important element for the protection of the environment and the general resilience of the TII such as waves, undersea currents, winds, ice, the natural elements and the functions it has[15].

15We particularly note the passage of Hurricane Katrina, which occurred in the Gulf of Mexico and caused relative destruction and submerged 115 facilities with

TIIs have a high cost for maintenance and decommissioning (Hamzah, 2003) making the phenomenon particularly problematic regarding decommissioning, which we will analyze in subsequent paragraphs (Sikiti Da Silva, 2013).

We are talking about a safety issue due to the special status they have and for the protection of safety. Achieving targets for TII construction, infrastructure, autonomy, transport costs and decommissioning as well as the change of location has negative consequences on the marine environment with large amounts and resources that cannot always be covered as they should.

The difference between artificial islands and permanent installations

Since 1950, the first artificial islands have been located in the Netherlands: Flevopolder and Noordoostpolder with an area of 970 km and 460 km respectively, which together form Flevoland[16]. In a smaller area, Yas Island (Ouis, 2011) is located in the United Arab Emirates with a total area of 25 km and

significant damage to over 54, of which 20 were unhooked and drifted out of position. These are events where they had to do with the leakage of 8,000,000 gallons of oil into the marine space since, just for comparison, 11,000,000,000 gallons had already leaked since 1989 due to the wreck of the Exxon Valdez, in Alaska). Oil rigs fell to Hurricane Katrina: http://www.washingtonpost.com/wp-dyn/content/article/2010/10/21/AR2010102106618.html. These are disasters that caused difficulties in the production of hydrocarbons in the area at very high levels. Blair Smith, El., Katrina cripples 95% of gulf's oil production, USA Today, http://usatoday30.usatoday.com/money/industries/energy/2005-08-30-katrina2-refinery-usat_x.htm

16 http://www.flevoland.nl

Kansai International Airport (Furudoi, 2005), which consists of 10.5 km. The sizes seem quite large and the volume of materials and resources for the construction and structure has to do with the absorbency of external pressures such as waves, undersea currents, winds, natural violent phenomena that connected with shallow depths and are located near coastlines. Long-term use and negative side effects are associated with the decommissioning and construction of the coastline affecting coastal engineering (Salahuddin, 2006).

The methods of constructing artificial islands also allow for another, quite rare, method that has to do with filling valleys with water, where hills are transformed into islands. This method is applied exclusively and only inland and has nothing to do with land reclamation, that is, the technique that is confused with the policy of land reclamation. It is used in some countries that expand their territorial territory, as happened in Singapore and Hong Kong. It is achieved through the use of structural materials and poldering (from a Dutch term), which combines the removal of water from lands, that are related to low altitude.

A basic element is the construction area, which depends on the use that the TII will make, the placement for the stability of the subsoil, the morphology of the seabed, the technique of reinforcing the subsoil and the final construction of the materials

from the land are important for the achievement and fulfillment of the objectives of a TII, where it is also related to the phenomenon of integration into reefs, for example artificial islands as well as into rocks, into island territories as we saw in Singapore, Jurong and to lagoons for the creation of coral reefs.

Fig. 4: Poldering, Zuidersee

Source: van Veen, J., *Dredge, Drain, Reclaim. The Art of a Nation*, 5th ed., Martinus Nijhoff, The Hague, 1962, p. 129.

In particular, poldering has to do with low-lying coastal areas, where it transforms the spaces in a stable way to avoid waves, tides, storms and landslips by delimiting and draining the waters through management systems, so as to avoid other types of inflows with the ultimate purpose of use and habitation (Hooimeijer, 2011)[17].

Fixed installations, on the other hand, are placed in the sea, on the seabed with a permanent character. The first are created from wood and are particularly vulnerable and have been used worldwide since 1946, specifically from steel in the Gulf of Mexico on an installation surface that reaches 1.2 km and is supported on 300 cylindrical metal pillars and at a depth of 4.5 meters as well as at a distance of 8 km from the coastline, that is, outside the area of the territorial sea of the U.S. and taking advantage of the provisions that we had from the relevant statements of the Truman Declaration (Paik, Thayamballi, 2007).

In the form of concrete material, they have been used mainly in the North Sea since 1973 (Paik, Thayamballi, 2007). They do not have the same elements that are included in artificial, natural

17According to Hooimeijer: "(…) polders are a special type of drained agricultural land typically found in low-lying coastal areas (...). Before impoldering, polder areas were either waterlogged or temporarily or permanently under water. An area becomes a polder when it is separated from the surrounding hydrological regime in such a way that its water level can be controlled independently of its surrounding regime. This condition is accomplished by various combinations of drainage canals and dikes (…)".

islands because the absence of natural materials in the construction, such as soil and gravel, has a different appearance since there have been no proposals, attempts for the relative addition of other elements of natural origin such as plants, trees, etc., in order to give a natural dimension to the environment intended for housing and recreation. They are fixed to the seabed, on platforms and on surfaces where the uses give way to horizontal development and reach the surface area, that an artificial island can have within the plan area. Also the use of several levels has to do with the increase in the useful surface. The surface also deals with the multiplication of the plan area and the number of levels that increases if something needs to be done. Specifically, the North Rankin B installation, which was created in 2013 in Northern Australia and with a plan area of 5 km, is an exception and not a rule[18]. Their use has characteristics such as their height, weight, and volume, which are written among their special characteristics.

The largest installation is considered to be Petronius, the tallest structure on land and at sea, reaching 609 meters and considered the heaviest structure in the Hibernia installation[19]. The structural elements for their creation have to do with special ships that are towed by cranes to a pre-selected point that

18North Rankin Redevelopment Project, Indian Ocean, Australia, http://www.offshore-technology.com/projects/north-rankin-redevelopment-australia/

19Hibernia Construction, http://www.hibernia.ca/

occupies the relative assembly. The fixed installations are located at a moderate depth that can reach 600 meters, where natural structures can offer more resistant structures in contrast to artificial islands and their displacement to another location can be planned and taken into account.

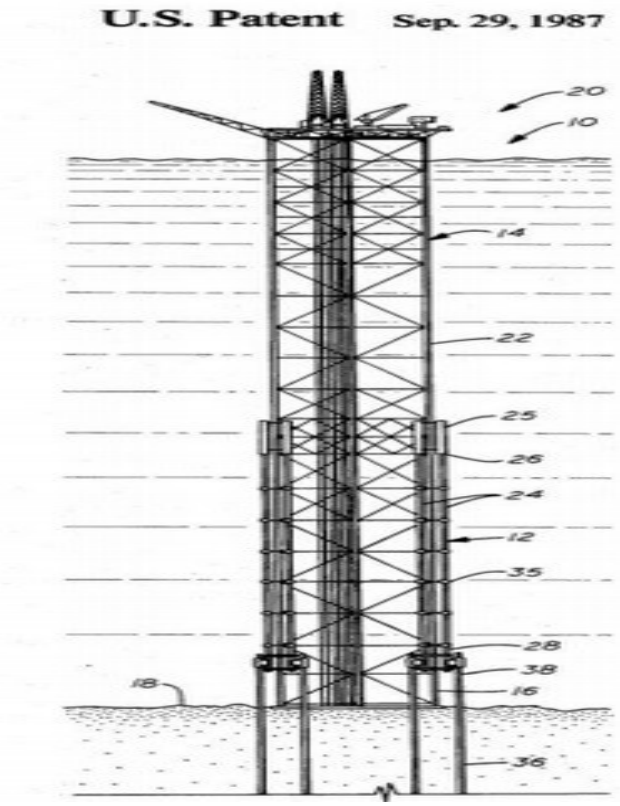
Fixed Installations are divided into: a. Jacket Structures, b. Compliant Structures, c. Gravity Structures, d. Caisson Structures, e. Submersible Structures, f. Guyed Towers. Specifically, Jacket Structures consist of 4 or 8 cylindrical metal pillars and are placed in the subsoil of the seabed, thus ensuring the required stability of the relevant installation (Esmaeili, 2001).

Various levels are built on top of it and with various forms of use. These structures are mainly used for the extraction of hydrocarbons at medium depths such as the Bullwinkle installation in the Gulf of Mexico with a location where the greatest depth of its kind reaches 415 (Chakrabarti, 2005) because the large load can provide the relative stability needed.

Compliant Structures consist of a straight metal pillar placed on a fixed base, founded on the seabed (Will, 1999). This is a technique that ensures the ability of movement in the installation as a compensation for natural pressures. They have a relatively small surface area and can thus accommodate small loads placed at moderate depths with use having to do with the contact

points, loading for processing units and for tankers where there are crude hydrocarbons. The low cost of construction as well as the use also provides great absorption for natural pressures as a necessary and safe area for use and the wave that strains a great degree on the mooring system.

Fig. 5: Compliant structure model



Source:http://patentimages.storage.googleapis.com/pages/US4696604-1.png

Gravity Structures use concrete and rarely steel due to their heavy weight and are placed on the seabed. The elements used have to do with the group of metal or cement tanks that are connected to the transport of installations that provide buoyancy in the placement and storage of produced hydrocarbons for the placement of ballast with the ultimate purpose of (a) stabilizing the installation that function as a support base, (b) the pillars that are stabilized at the base and are supported from above, and finally (c) the decks.

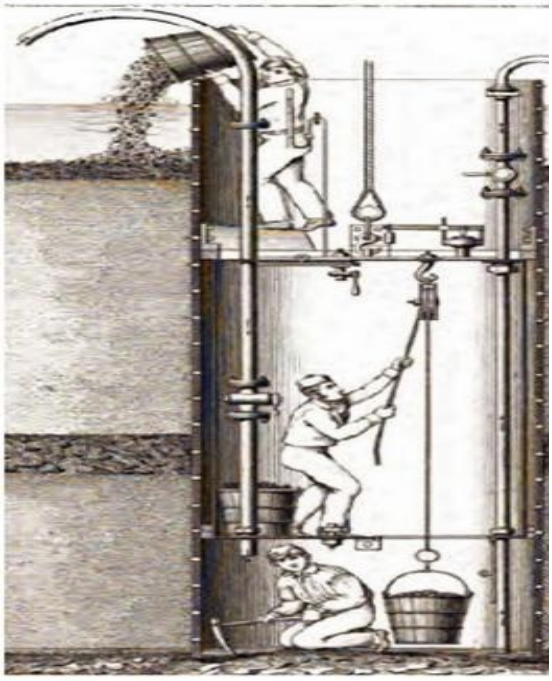
These are structures located at shallow depths, in areas where the transport of the relevant products is not so easy due to weather conditions where the morphology of the seabed makes it difficult to transport hydrocarbons by ships and submarine pipelines. Their relative durability (Mather, 2000) aims to ensure the accommodation of the cargo, such as the storage capacity and the construction cost in relation to the locations and with a weight that will make it difficult to move the entire project.

Caisson Structures are divided into two sub-forms, those that are: a. open type (or well type, i.e. they are open at both the base and the top) and b. closed type or floating type where they are open only at the top and are made of cement or metal in a cylindrical or polygonal shape.

Initially, those that were open-type were used, that is, structures

that have to do with mining that have an auxiliary character, such as air ducts in other underwater activities. In addition to the construction material, external reinforcements of cement and rocks are added, thus giving greater volume (Smoltczyk, 2003) and creating an artificial vertical well that is placed on the seabed and at shallow depths. Accordingly, those of the closed type are units that function as relative bases on which the decks are supported.

Fig. 6: Caisson well model



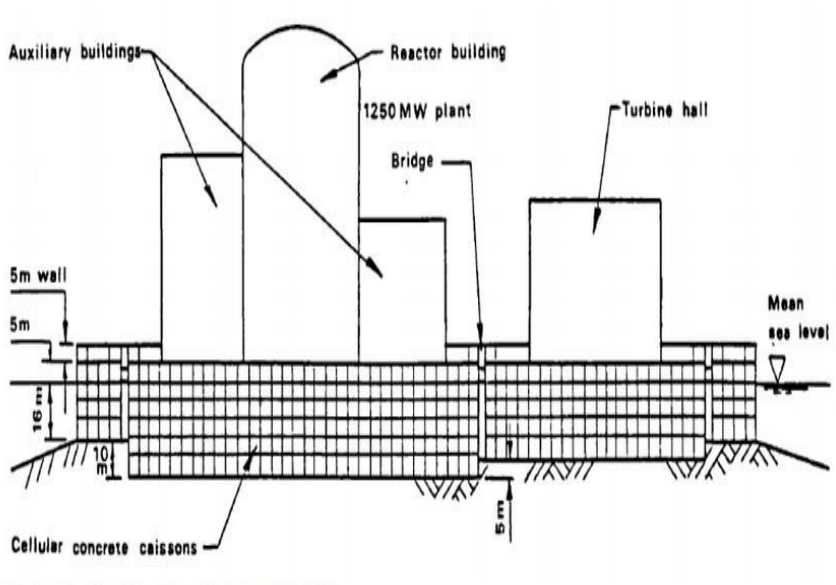
Source:https://commons.wikimedia.org/wiki/File:Proc%C3%A9d%A9_Triger.png

This is a technique with a similar method that deals with gravity constructions and is confused with the use of anchoring systems or Foundations (Caisson Foundations), where they have an auxiliary character in fixed and semi-fixed Installations. These are types that are constructed on land and on the seabed, through a waterproofing process.

Specifically, the open type have small sizes and their construction technology is simple and the cost is particularly low. Their structure can bring small loads to serve limited uses and be located at shallow depths.

As for the closed type, they can be located at greater depths and have a greater load, naturally according to their volume, where the surface they cover increases with further additions and the cost of preparation for the formation of the area is proportional to the work to be done.

Fig. 7: Model of Caisson Island



Source: Commission of the European Communities, Binnie & Partners, *Islands for Offshore Nuclear Power Stations*, Graham & Trotman Publ., London, 1982, p. 44.

Submersible Structures are fixed structures that are easily moved[20]. They are metal structures such as pylons with floats on top. The specific structure is made on land and the towing for the placement of the bottom is connected to the ballasting of the floats. After use, the floats and the structure are detached from

20How offshore drilling units evolved, http://www.offshore-mag.com/articles/print/volume-57/issue-5/news/special-report/how-offshore-drilling-units-evolved.html

the bottom and are ready for movement to a new point (Chakrabarti, 2005).

The advantages are the ease of movement, their conversion into semi-fixed installations as disadvantages, where their relative ability at shallow depths increases the cost in a proportional way to the depth and to the installation on the bottom in a way that deals with the morphology.

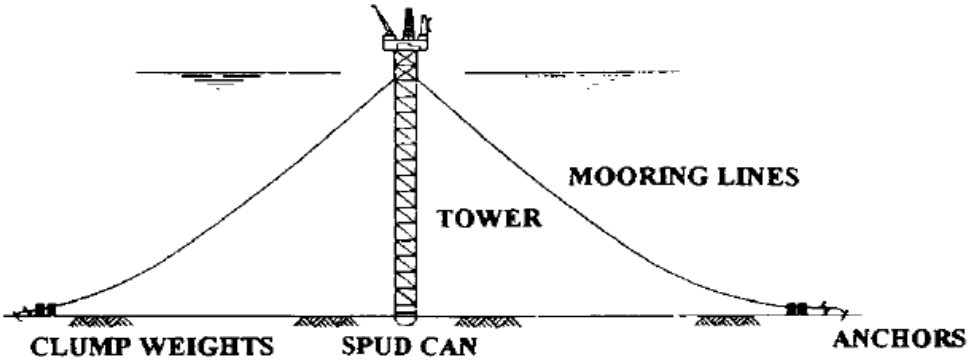
Fig. 8:Bretton Rig 20

Source:http://www.offshore-mag.com/content/dam/offshore/print-articles/volume-74/10/1410offshell1.jpg

Guyed Towers (or Stayed Towers) have the characteristics used in tower constructions, with the first construction named Lena as

a post-evolution model used in the USA in 1983, with the only difference being the placement and use of cables anchored to the seabed and around the perimeter of the installation so that they have greater strength (Chakrabarti, 2005).

Fig. 9: Guyed Tower



Source:http://ebah-web-586602798.us-east1.elb.amazonaws.com/content/ABAAAfk-IAC/offshore-structures

(Follows): Semi-Fixed Installations

When installations with the help of anchoring, perhaps anchoring, are placed on the seabed, then we speak of semi-fixed installations (SE) as metal structures, where other

materials are also found despite the fact that there are international conditions that have not been included. The greater depths where they are placed have to do with the possibility of moving the installation for a relative change of position and in case of need for short-term use in long-term periods of time with multiple points.

The feature of reducing financial costs deals with the use that minimizes the negative consequences of decommissioning. Naturally, they have almost the same characteristics as fixed installations based on pylons that support decks, achieving through the help of chains and wire ropes in the placement of the bottom the height of the structures to be limited to tens of meters until the surface has different shapes depending on the construction, which will happen when the structures have to do with the combination of small surface area and high height such as Spar Platforms, while others concern small height and a larger surface area, i.e. Semi-submersible Structures.

The SE are made before being placed on land and then they are ready for launching and use. They are usually towed from the placement, which starts from a large volume of limited movements, the placement of propulsion engines, which is particularly expensive with the exception of rules that have to do with small structures such as Jack-up Platforms mainly for shipping and which is then assisted by buoys. They are

stabilized after they approach it except if the anchoring, anchoring is associated with the stabilization, which is reinforced through ballasting and for Jack-up Platforms, and the use of pylons which are mainly located on the seabed. They are placed at very great depths, between 2,500 and 3,000 meters and stabilized after a few weeks to a few years. The stabilization and placement has nothing to do with the operation of the entire installation but with protection from other dangers.

The differences between fixed installations and SE are based on the fact that fixed installations can be transported to a location loaded on a vessel. SE, however, are not towed under their own power but acquire the same characteristics as fixed installations, since from a legal point of view, they happen to be the same. After the moment they are created, the characteristics of fixed installations follow are not classified in the category of ships, thus remaining as a category that is separate from seagoing vessels. SE are not the same thing as ships but are designed to operate and be identified with ships. For this reason, their legal connection is particularly complex with the status of final installation.

The separation of SE into other subgroups is possible. The separation is made into: a. Semi-submersible Structures, b. Spar Platforms, c. Tension Leg Platforms, d. Jack-up Platforms.

Semi-submersible Structures are a development of submersible structures, where according to the name Bluewater Rig No 1, it is simply a conversion from 1961 to a Bretton Rig 20 Submersible Structure[21]. These are structures that are not placed on the seabed but are stabilized after being anchored or moored after sailing to the point where they will be placed. Floats are used for unmooring and the movement is done from a new point since they are used for heavy work at great depths as a result and in difficult weather conditions to have the ability to sail at a satisfactory speed. The great weight, the high cost, the difficult structural placement and the rare way of the bridge at the corresponding point, as well as the maintenance and repairs, are objects of research.

SPAR (Single Point Anchor Reservoir) Facilities are the new form of options for SE[22]. We are talking about metallic, cylindrical tanks where versions such as Cell or Truss have to do with the networking of space below the tank and for stability reasons they are suspended from the sea surface to a diameter that reaches 50 meters and a height of 250 meters within a mooring arrangement[23].

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21 Semi-Submersible Ships and Semi-Submersible Rigs: A General Overview: http://www.marineinsight.com/marine/types-of-ships-marine/semi-submersible-ships-and-semi-submersible-rigs-a-general-overview/

22 The North Sea's biggest decommissioning programmes: http://www.offshore-technology.com/features/featurenorth-sea-biggest-decommissioning-programmes/

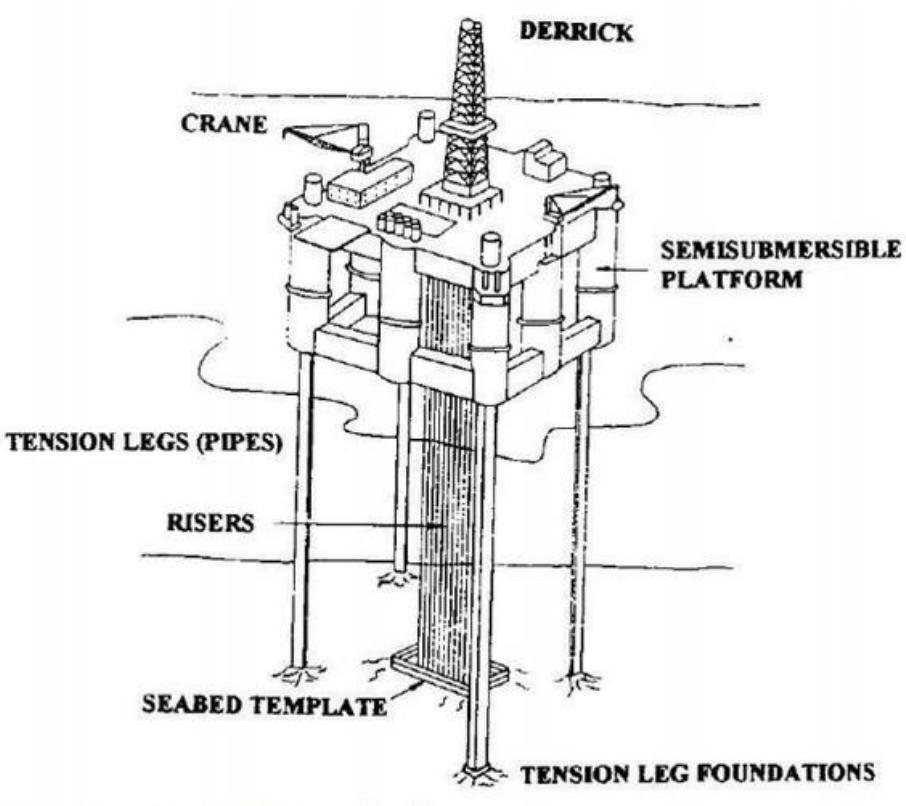
23 Holstein Oil and Gas Development, United States of America: http://www.offshore-technology.com/projects/holstein/

The tank gives the possibility of floating since it is constructed on land, in a ballast storage space that offers greater stability (Chakrabarti, 2005). After mooring and the placement of decks in a polygonal shape they can be used at other greater depths. They have low maintenance costs and are naturally durable, but the volume of transport requires strong means of transport for the diameter that the floor area does not allow.

Tension Leg Platforms are similar in appearance to the SE, including the Mini Tension Leg Platform which has the structure of a tank as its body and not floats as a stabilization technique, which essentially remains the same but does not have the same way of being placed at any specific point. They do not have any data that has to do with ballasting, because Tension Leg Platforms deal with vertical mooring/anchoring that extends to the space where they are transported or towed (Chakrabarti, 2005) and at great depths, such as the Hutton platform, which was built in 1984 and placed in the North Sea, as well as the Magnolia platform which has the greatest record as the deepest placed in the Gulf of Mexico and is around 1600 meters (Mather, 2000)[24].

24Magnolia Deepwater Oil and Gas Field, Gulf of Mexico, United States of America: http://www.offshore-technology.com/projects/magnolia/

Fig. 10: Tension leg platform



Source: https://indomigas.files.wordpress.com/2008/11/tlp.jpg

Fig. 11: Magnolia Platform

Source: www.drillingformula.com

The technical stabilization is not related to the depth at which they are placed. The anchoring system and maintenance is a weak point regarding the structures.

Jack-up Platforms are floating structures that are placed on the seabed and through a system of retractable pylons, where they are adjusted according to the depth and height and are raised to a structure at sea[25]. As for the decks, they are and are located on a

25Drilling Rig Economics: Harsh-environment, ultra-premium jackups taking advantage of US market shifts: http://www.offshore-mag.com/articles/print/volume-61/issue-2/news/drilling-rig-economics-harsh-environment-ultra-premium-jackups-taking-advantage-of-us-market-shifts.html

cetacean or box-shaped float where they can also have autonomous propulsion. They are towed without any external assistance from the moment the relevant structures exploit the hydrocarbons that are available for use and without external assistance since the transport is done after low speed. The procedure for placement requires calm waters[26].

Fig. 12: Jack-up Platform

Source: http://oilrig-photos.com.s3.amazonaws.com/1714.jpg

26Modern offshore fleet comprised of same rig types as in the 1950s: http://www.offshore-mag.com/articles/print/volume-67/issue-9/supplement/modern-offshore-fleet-comprised-of-same-rig-types-as-in-the-1950s.html

What is the reason for creation and what are the restrictions for artificial islands and installations?

As reasons for the creation of installations and technical islands, we can mention: 1. The general benefit from its presence in the sea area mainly for economic exploitation of natural resources and as a purpose the point where it will be located. The sea area is special for the use of a TII where it will have low cost and will be easy from a technical side and exploitation at low temperatures to be able to cool a nuclear reactor as well as the exploitation of wave energy. 2. An environment where in the eyes of man it seems to be pleasing and particularly for the coastal zone both from an economic, social and psychological point of view as an enticing form that allows the modern man of cities. 3. The lack of land and the increasing pressures on the part of the world population have the effect of attracting coastal areas, the rise of sea level in a small area as a factor that leads to several deficits from the surface for a series of primary needs for man where many times this type of TII has been created. 4. The nuisance from installations. This is a series of activities that, to an external degree, have to do with related hydrocarbon extraction facilities located far from the coast. 5. The weakness, difficulty of the coastal zone. When there is a lack of land or the existence of conditions in the marine space hinder the activities that deal with the use of TII and the alternative option. The

seabed according to its geomorphology, the geography of the coast, biodiversity, the lack of construction of other ports are factors that are associated with the use of TII, as an alternative form.

Ports that are navigable, like storage areas, have to do with an intermediate point in the transport chain in terms of connection with other means, such as pipelines and smaller floating vessels, that contribute to the traffic-environmental use of the general space.

The legal and legitimate motives are related to various legal frameworks, that benefit the application of legislation, installations outside maritime zones, that do not belong to national jurisdiction, thus removing them from legislative frameworks of a mainly fiscal and economic nature, where they apply uses of a prohibitive and inconvenient nature, such as, for example, the use of REM Island, as a fixed installation located outside the Dutch exclusive economic zone and transmitting a signal from Nordzee Radio and Television.

The required operating and broadcasting licenses were not obtained from the Netherlands where the enterprise was not subject to any radio and television regime and for this reason the relevant activity was discontinued (Van Panhuys, Van Emde Boas, 1966).

The expansion of national sovereignty as a desire of states, that

maintain maritime, territorial sovereignty, are cases where they attempt to expand a territorial, maritime territory in accordance with the use of TII as a main point of international law of the sea and international law, also with the example of Japan, which claims an EEZ around Okinotorishima, i.e. it is a reef located in the Pacific Ocean and uses TII (Song, 2009). Several individuals may attempt to create states in a form of independence from TII since the relevant efforts have failed and have caused intense scientific debate (Dennis, 2002).

The creation of TII is a right that has acquired a customary character over time, both because of the zones of national jurisdiction and by interested states that have exercised the relevant right. The rights of coastal states thus weaken the use of the coastline as well as the internal waters of the territorial sea with the exclusive right to construct and use TII within the continental shelf and the EEZ before reaching the high seas and the international seabed in a regime under complete freedom of navigation.

The relevant restrictions that can be used at the national, regional level through general rules and for states have the obligation of the relative observance of certain rules, such as a general peaceful clause for the maritime space where states are obliged to refrain from the relative use and threat of force and to respect the principles of international law through UN law. The

use of force has a defensive character. The zones of national sovereignty and the taking of defensive installations have to do with military exercises as actions that do not concern military exercises and protests by third states.

The prohibition of military use beyond defensive rights concerns military activities, where respect for and prohibition of activities in Antarctica and the prohibition of the use of weapons of mass destruction, are principles of international law, that are widely observed. Illegal activities through a series of crimes under the Convention on the Law of the Sea are prohibited from being prosecuted and taking place on the high seas.

Specifically, piracy, illegal radio broadcasts, slave trade, drug trafficking and related activities according to the nationality of each state where the broadcasts clearly relate to the TII and activities on ships where the movement to carry them out has to do with the involvement of a relevant TII, as a phase of activity that made the relevant entity necessary for the case. Other legitimate uses are linked to the rights of the coastal state, such as the exploration and exploitation of resources and the continental shelf related to the freedoms of the high seas, the passage through straits of international navigation and archipelagic sea lanes. Respect for the environment and protected areas according to the level of protection prohibits the use of TII for reasons related to environmental, historical, etc.

protection. The regime of exploitation of natural resources concerns fishing and the extraction of minerals from the international seabed.

All these restrictions have to do with the TII and the protests from the affected parties, which are mainly concerned with the phenomenon of creeping jurisdiction, where TII can be used[27]. Naturally, states also have as their main objective to respond to new needs and methods, i.e. biofuels, the exploitation of hydrates, genetic resources bioprospecting, parking for drones, where cases of transfer or relocation of uses when there is no suitable space concern island territories and inhabited areas, where the transfer of illegal activities such as organized crime, piracy, drugs play a particular importance for the use of TII, which should not have a speculative purpose both for the acquisition and for the maintenance that does not allow private ownership and the change of data as well as the relevant rights for owners of all kinds.

The possibility of dual use, as well as mixed military and political use within a TII, has various complications that can arise from defense and security installations regarding vessels used for immunity by the relevant state as well as political use that violates international rules (Treves, 1980).

27Claims of creeping jurisdiction are not set in regulatory language but are rather based on construing new ways to read the provisions establishing the existing maritime zones.

From The Hague (1930) to Geneva (1958 & 1960). From the first judicial discussion at the Hague Conference

Through an old arbitration of 1893, the issue of TIIs was also addressed. Specifically, we refer to the Fur Seal Arbitration case (1893) between the USA, Great Britain and Canada. The case concerned biological reserves for the territorial status of a TII. The representative from the UK Britain stated in this regard that:

"(…) a lighthouse, which is either located on a rock or is based on pillars that rest on the seabed, forms part of the territorial territory of the state that has built it (Jayewardene, 1990) (…) the presence of a lighthouse, which was the most important navigational aid, had to be protected by some form of "sovereignty" where traditional activities concern the maritime space, namely fishing, ships through a perspective at sea where the contestation of freedoms in a maritime zone and their relative limitation has to do with fishing vessels of third states that are active in the installation and hinder the operation that considers that the safety of navigation is strong due to the economic rights they entail for states and not only (Johnson, 1951; Lewis, 2021), while the technical characteristics of its installation were relegated to second place (…)".

On the other hand, the USA, in a climate of competition and through their representative Philip C. Jessup, reported that:

"(…) abuse by states which would seek to create Islands and Installations in places where they had or could pursue their own special interests (…)" (Jayewardene, 1990).

Beyond reefs, states at that time were also interested in rocks, reefs and other similar installations (Jayewardene, 1990) as an aid for floating airports which were called "seadromes".

The facilities would solve the problem of air transport supply and the legal status of the facilities. According to the views of De Leon and Molenaar, they had to do with:

"(…) a) the facility being under the sovereignty of the state of construction, b) the facility being under the sovereignty of the state of nationality of the manufacturer and c) the construction permit being provided by a competent international organization, since it is located on the High Seas (De Leon, Molenaar, 2004) (…). New chapters were added to the problematic of the status of TIIs, since we are now talking about new commercial activities, which can also be undertaken by private individuals and are located on the High Seas (…) the limited jure imperii activities of the state, we are entering an era of intense activity of private individuals, and even in areas beyond national jurisdiction (…)".

The Hague Conference on the Codification of International Law (1930) dealt with both the law of the sea and the question of the territorial sea. The status of the TII would not be subject to examination since the extent of the territorial sea and the baselines brought the TII into its actual form of discussion. Article 1 of the draft convention on the territorial sea stated that:

"(...) island has its own territorial sea. An island is an area of land, surrounded by water, which is permanently above high water-mark (...)".

The creation of an island, which also dealt with artificial islands, would apply only within the law relating to zones of national jurisdiction and the baselines method. Specifically, Germany and the Netherlands interpreted this. In this regard:

"(…) the term island does not exclude artificial islands provided that these are true portions of the territory and not merely floating works, anchored buoys, etc. The case of an artificial island erected near to the line of demarcation between the territorial waters of two countries is not included (…)" (Heijmans, 1974).

The issue of territorial sovereignty in the case of arbitration and ownership and licensing brings to the Hague Conference the technical issue of the existence of a TII with some specific observations:

"(…) a) despite the ambiguity of the interpretation, it seems that Artificial

Islands are assimilated, from the point of view of Sovereignty, to Natural Islands, b) Artificial Installations remain outside the scope of regulation, c) AIs, despite the fact that they enjoy a Territorial Zone, are excluded from being counted as points for drawing Baselines (…) AIs are upgraded to the level of rights that Natural Islands have, this oxymoronic exception remains to remind us of their difference (…)".

This specific upgrade could be explained as a construction of technical installations that were limited. The technical means would not allow for long distances, such as the coasts and the large expanse to remain in order to address the issue of the islands and installations, in accordance with the rules of the law of the sea and international law.

In our opinion, this is a plan with several ambiguities regarding the islands and as mentioned by Gilbert Gidel, who in his work "Le Droit International Public de la Mer (1934)" sustained:

"(…) an island is a natural elevation of the earth's sea-bed, which is surrounded by water and which is placed permanently above the sea, where natural conditions allow for the permanent establishment of a human population. Natural islands can be assimilated to artificial islands so long as the latter satisfy the same conditions. These conditions include those instances where the formation of islands has occurred through the action of natural phenomena or has been accelerated by means of works. However, the interchangeable status of artificial islands to natural islands only applies to those islands which are found at least partially in the territorial sea of a state (...)".

The Truman Proclamation of 28 September 1945[28] referred to natural resources that were established in zones of national jurisdiction. This movement in a gradual stage had to do with

28Proclamation 2667, Policy of the United States With Respect to the Natural Resources of the Subsoil and Sea Bed of the Continental Shelf: https://www.presidency.ucsb.edu/documents/proclamation-2667-policy-the-united-states-with-respect-the-natural-resources-the-subsoil#:~:text=Having%20concern%20for%20the%20urgency,appertaining%20to%20the%20United%20States%2C

the practices that competed as a rule of customary law for the continental shelf. The exploitation of certain resources and hydrocarbons, their spread and their use needed final regulation, since it concerned the high seas and zones of national jurisdiction. In parallel, the International Law Commission questions of international law and the law of the sea[29]. The Commission began its relevant work and completed it in 1956[30]. The Hague Conference (1930) (Jayewardene, 1990) elaborated national rules and delivered the relevant draft with 72 articles. According to Art. 10[31] an:

"(...) island has its own territorial sea. An island is an area of land, surrounded by water, which in normal circumstances is permanently above high-water mark (…)".

A relative confusion appears concerning the territorial sea, where according to the interpretative comments of the draft articles the specific article mentions and excludes the two cases of islands:

"a) (…) Elevations which are above water at low tide only. Even if an installation is built on such an elevation and is itself permanently above water a lighthouse for example – the elevation is not an island as understood in this article" and β) Technical installations built on the sea-bed, such as installations used for the exploitation of the continental shelf (...)"[32].

29 According to Resolution 374 (IV) of the UN General Assembly, 6/12/1949: https://research.un.org/en/docs/ga/quick/regular/4

30 International Law Commission, Yearbook of the International Law Commission 1956, vol II, United Nations Publication, New York, 1957, 254-256.

31 International Law Commission, Yearbook of the International Law Commission, vol II, 1956, ibid, 265-301.

32 According to article 71, par. 3: "(…) installations, though under the jurisdiction of the coastal state, do not possess the status of islands. They have to territorial sea of their own, and their presence does not affect the delimitation of the territorial sea of the coastal state (...)".

The two plans, together with their interpretative comments, beyond the interest they present for their time, are decisive for artificial installations and for the exploitation of the continental shelf through a provision that constitutes an institutional enshrinement regarding the artificial installation of lighthouses and reefs (Papadakis, 1977; Saunders, 2021)[33].

The basis and evolution for research related to exploration and exploitation is now a reality within the general framework of freedom of navigation. Terms without specific clarification appear scattered, such as islands, technical installations, territorial sea, high seas, technical installations, exploitation of the continental shelf within a framework of the territorial sea, where the coastal state has sovereignty[34].

The sovereignty of the coastal state has as its purpose the right to create TII and to respect the rules of international law as noted in article 1, paragraph 2 and the right of innocent passage according to articles 15/17 (Heijmans, 1974; Samie, 1977). In parallel, the draft articles of the ILC were not accepted by the following treaty texts and specifically by UNCLOS[35].

33 See also comment 6 of Article 71 of the draft of articles. Papadakis also affirms that: "(…) as regards the legal status of installations and other devices used for exploration and exploitation of the natural resources of the continental shelf, it is clear that these cannot be assimilated to ships or islands. The Geneva Convention on the Continental Shelf has, more or less, created a distinct legal category of maritime structures (…)".

34 According to art. 1 of the draft of article.

35 For the analysis of the articles related to UNCLOS see the book of Proells (2017).

Artificial installations have also been addressed by the continental shelf where, in accordance with art. 5, par. 2, reference was made to the construction and use. Article 2 states that:

"(...) installations and other devices necessary for its exploration and the exploitation of its natural resources (...) which, however, is not self-existent but arises from the Sovereign Right to Explore and Exploit the Natural Resources of the Continental Shelf (...)" (Brown, 1971)[36].

Article 5 of the Convention resembles Art. 71 of the relevant draft articles of the ILC regarding the jurisdiction of the coastal state, the establishment of safety zones, the obligation not to obstruct navigation and the absence of the right to zones of national jurisdiction. The convention also uses the term "device" without mentioning its content (Papadakis, 1977). It does not, therefore, make any reference to Artificial Islands.

As for the term device, it is not clearly defined and creates endless interpretations that often result in confusion and ambiguities. In French legislation, with law 68/1181, par. 3, for example, the term seagoing vessels engaged in activities of exploration and exploitation of the continental shelf is used, where the category of installations and devices refers to the continental shelf.

This is a difficult interpretation if we compare it with Art. 5, par. 4 of the Convention on the Continental Shelf, which is under the

36Brown declared that: "(…) it would be illogical to recognize these rights (…) without also recognizing the corollary-the right to exploit these resources by means of structures or devices situated in, or extending into, the superjacent waters (…)".

full jurisdiction of the coastal state and has to do with a more customary rule on the jurisdiction of the flag state. The purpose was to make it explicit and implicit that the prohibition on further claims to the zones of national jurisdiction could only be applied when concern a ship and is understood as a device.

Within this context, installations related to the continental shelf do not concern the sovereign right of exploration and exploitation of natural resources. The confusion has to do once again with the installations located beyond the seabed and the continental shelf as well as with the High Seas Convention directly[37]. The TII beyond the Continental Shelf as well as those located and used for the exercise of the sovereign right of exploration and exploitation of natural resources of the coastal state concern the provisions of the High Seas Convention.

In parallel, the ILC in Comment 2 to article 27 states that:

"(…) Commission has not made specific mention of the freedom to explore or exploit the subsoil of the high seas. It considered that apart from the case of the exploitation or exploration of the soil or subsoil of a continental shelf-a case dealt with separately in section III below-such exploitation had not yet assumed sufficient practical importance to justify special regulation (…)",

there were no necessary conditions for such use[38]. The use of

37 According to article 1 of the treaty of high sea "(…) high seas means all parts of the sea that are not included in the territorial sea or in the internal waters of a state (…)".

38 Resolution 2574 D of the UN General Assembly (15/12/1969) (https://legal.un.org/diplomaticconferences/1973_los/docs/english/res/a_res_2574_xxiv.pdf) declared that: "(...) (a) States and persons, physical or juridical, are bound to refrain from all activities of exploitation of the resources of the area of the sea-bed and ocean floor and the subsoil thereof, beyond the limits of national jurisdiction (…)" with the ultimate aim of protecting the natural resources of the area where it was concerned to demonstrate an existing as well as future capacity that

TIIs for the high seas is permitted insofar as it does not conflict with other uses.

As we have seen, the legal issues for the 1958 Geneva Convention were based on the interests of the great powers concerning the right to use the oceans and the seas, as well as the passage through International Straits and the Zones of National Jurisdiction of Third States. Over time, certain issues arose that had to do with the birth of the institution of the continental shelf, the claims for a zone that would have an economic character, as well as the exploitation of the natural resources of the seabed beyond the relevant zones of national jurisdiction.

The continuous increase in environmental protection occurs at the same time that decolonization and continuous technical developments give rise to new sectors for the exploitation of mineral and biological resources for scientific research of the sea, meteorology, shipping and the continuous demand for energy resources (Kaye, 2007).

On 18 December 1967[39] the General Assembly established the Ad Hoc Committee to Study the Peaceful Uses of the Sea-Bed and the Ocean Floor beyond the Limits of National Jurisdiction, with the ultimate aim of continuing investigation into legal and

admits the corresponding legal gaps (…)".

39Decision 340 GA/UN: https://documents.un.org/doc/undoc/gen/n19/279/83/pdf/n1927983.pdf?token=h4J8DiUNjZafTy0d9M&fe=true

practical questions relating to the exploitation of the natural resources of the seabed, oceans and seas. On 21 December 1968 it was upgraded to a Standing Committee, which remained known as the Sea-Bed Committee[40]. Its work resulted in the Declaration of Principles Governing the Seabed and the Ocean Floor, and the Subsoil Thereof, beyond the Limits of National Jurisdiction[41], in which it declared the seabed, the subsoil and the natural resources thereof to be the common heritage of mankind.

A new institution was the common heritage of mankind. It is a result of the arrangement that the international community had the opportunity for a series of issues and for the holding of a conference that took place in 1973[42], that created the Geneva Convention framework of 1958 with several unclear points as well as open points on the law of the sea, although the relationship with the TIIs operated differently over time.

The Work of the International Seabed Commission 1971-1973

When we talk about the international law commission we refer to the proposal made by the Soviet Union to delimit space

40 Decision 2467 GA/UN.

41 Adopted by Resolution 2749 GA/UN, 17 December 1970: https://legal.un.org/diplomaticconferences/1973_los/docs/english/res/a_res_2749_xxv.pdf

42 Adopted by Resolution 2749 GA/UN, 17 December 1970.

stations along with the construction, maintenance, operation of

"artificial islands, floating harbours and other installations (…)" (Nandan, Rosenne, 1993).

In the agenda of the 3rd conference which numbered 25 entries in the 18th position the issue of "Artificial Islands and Installations" was mentioned. The proposals that were followed regarding technical islands were different and among others we mention the case of Belgium which made a relevant reference to:

"(…) construction on its continental shelf of artificial islands or immovable installations serving purposes other than the exploration or exploitation of natural resources (…)",

allowing the construction of TII for purposes of exploitation and exploration which has to do with the continental shelf.

A group of states such as Colombia, Mexico, Venezuela made a relevant reference to:

"(…) emplacement and use of artificial islands and any kind of facilities on the surface of the sea, in the water column and on the sea-bed and subsoil of the patrimonial sea (…)",

where the issue concerns the TII and a zone of economic content.

The USA, through a special draft of articles that we can say was quite analytical, stated that:

"(...) off-shore installations affecting its economic interests (…) the coastal sea-bed economic area of the superjacent waters (…) "installations" (…) "refers to all off-shore facilities, installations, or devices other than those which are mobile in their normal mode of operation (…)".

Argentina also stated that:

"(…) installations and other devices [on or over the continental shelf] necessary for the exercise of its rights (…)".

The negotiations on TIIs among groups of states opened the way for further research on the specific topic we were investigating but in an indirect way (Nandan, Rosenne, 1993), such as the 1958 Geneva Convention, the sympathy of states for the rights of TIIs. Rights that have to do with the right to manufacture, license and manufacture to third parties and for jurisdictions, where the safety zone has to do with the regulation and use of TIIs. Regulations of an economic nature and for similar terms with different content.

Artificial Islands in UNCLOS

The Second Committee of UNCLOS dealt with artificial islands and installations even when states had several interests, as it is evident from the relevant Commentary of the Center for Oceans Law and Policy, which has included 17 original proposals from states or groups of states, starting from the Second Meeting of the Committee in 1974, where a particular breadth is evident regarding the content of the proposals that in a comprehensive manner mention the ancillary rights and obligations that do not concern the right of construction (Nandan, Rosenne, 1993).

The most interesting concern the

"(…) offshore artificial islands and other installations for purposes of the exploration and exploitation of the non-renewable sources thereof (…)",

as Nigeria mentioned. Bulgaria and Belarus, the German Democratic Republic, Poland, Ukraine and the USSR referred to

"non-coastal installations and other facilities". The USA, in another relevant draft article it submitted, mentioned in relation to artificial islands that:

"(…) the purpose of exploration or exploitation of natural resources or for other economic purposes, and of any installation which may interfere with the exercise of the rights of the coastal state (…) installations refers to off-shore islands, facilities, or similar devices, other than those, which are mobile in their normal mode of operation at sea (…)".

Another group of states consisting of Gambia, Ghana, Ivory Coast, Kenya, Lesotho, Liberia, Libya, Madagascar, Mali, Mauritania, Morocco, Senegal, Sierra Leone, Sudan, Tunisia, Cameroon, Tanzania and Zaire submitted draft articles calling for the prohibition of TII in the Exclusive Economic Zone of a third state as well as any

"(…) military installation or device or any other installation or device for whatever purposes (…)".

All the specific proposals that had to do with artificial islands were included at the 2nd meeting of the 2nd Commission in 1974 within Parts VI (Continental Shelf) and V (Exclusive Economic Zone). This is a comprehensive, quite original text that formed the basis for negotiation for the plenary and the three committees.

Specifically, at the third meeting of 1975 we have the proposal of the Evensen Group[43], where it stated, in this regard, that:

"(…) a) artificial islands, b) installations and structures used for purposes

43It is about the Evensen Group of Juridical Experts, a leader who was a delegate to the 3rd conference where as a closed group he participated with the property arising from the continental shelf and the EEZ as he also proposed related articles based on topics that had been convened in time and proved invaluable way their help in the specific field.

subject to its jurisdiction (see: exploration and exploitation of natural resources), c) installations and structures used for any economic purpose, d) installations and structures which may interfere with the exercise of the rights of the coastal state in the economic zone (...)".

This is a commonly accepted proposal included in the Informal Single Negotiating Text (ISNT) and at the end of the 3rd Meeting where it is stated that:

"(…) a) artificial islands, b) installations and structures for the purposes provided in article 45 (see: exploration and exploitation of natural resources) and other economic purposes, c) installations and structures which may interfere with the exercise of the rights of the coastal state (...)".

The central idea of the TIIs had a specific basis[44], for this the participating states would focus on their relative interests, which were essentially regional state interests, concerning the rights and obligations of the TIIs, as well as the width of the security zone and the rights of states for military uses such as freedom of the high seas (Kaye, 2007).

The relative positioning of the TII had to do with certain axes that we saw them through the conference for the final convention. Positions regarding the perspective of the coastal state that benefits the use of the maritime space like the landlocked states. The regulation of the relevant responsibilities concerns national jurisdiction. The common interests and the

44From the documents of the Conference we discern a huge volume of proposals where the states discussed the content of the TII as well as the attempt to give a specific definition. Of course, the relative oversight may have to do with the legal field that gives an answer to the issue and the debate is not repeated in the states where they recognize the technical character of TII in a debate where the result has brought difficulties to the technological development of TII. The specific solution is in the middle where the contextual fields are not sufficient and the states are following rapid developments since the 1970s when the conference started and lasted.

conservation of fishery resources, the protection of the marine environment constitute a common denominator for several articles of the convention. The exploitation of natural resources concerns the transfer of technology and know-how as an approach for the use and management of maritime zones by both states and private individuals within the framework of the modern law of the sea.

Specifically, the TII were included in the second committee that was to deal with the continental shelf and the EEZ[45], thus listing under the title in point 18 "Artificial Islands and Structures" the variations regarding the combinations and terms, where they had the same content. The term "Artificial Islands and Structures" has a purely technical character, where a functional definition within Parts I (Introduction) and II (Territorial Zone and Contiguous Zone), which admittedly have a general character in their form, evolves as a purely descriptive element[46].

The obligations and rights of TIIs are related to the space in which they are located, to the use where they are determined, with the sole exception of internal waters, such as archipelagic waters and the territorial sea, as a use of particular importance

45We are talking about a total of eight reports dealing with parts V (Exclusive Economic Zone), VI (Continental Shelf), I (Import), II (Equipment Zone and Contiguous Zone), VII (High Seas), XI (Area), XII (Protection and Conservation of the Marine Environment) and XIII (Marine Scientific Research).

46"(…) installations and structures which may interfere with the exercise of the rights of the coastal state in the zone (…)", article 60, par. 1, lett. c) and according to article 194, par. 3, lett. d): "(…) installations and devices operating in the marine environment (…)".

for the life cycle of TIIs. These are artificial islands located within the territorial sea, on the continental shelf or the EEZ where, in accordance with international law, they are used by marine scientific research regardless of the space and the relative reference point.

More specifically, Article 11 affirms

"(…) off-shore installations and artificial islands shall not be considered as permanent harbour works (…)".

It is a rephrased position that has to do with the 1930 Hague Conference on Installations and Islands under the Status of Ports[47]. TIIs will be located in close proximity to the coastline as well as to port works that are considered part of the coast according to the baseline[48].

Offshore points have a port character and do not present legal characteristics (Nandan, Rosenne, 1993). The articles in Part II (Coastal Zone and Contiguous Zone) make explicit reference to TIIs as well as to zones of national sovereignty where they are not connected to the convention. The coastal state ensures the relevant right for each form of TII, thus preventing abuse for the manipulation of the baseline.

47The first part of article 11 affirms that: "(…) the purpose of delimiting the territorial sea, the outermost permanent harbour works which form an integral part of the harbour system are regarded as forming part of the coast (…)".

48It is about port works where they can have the following forms "(…) jetties, moles, quays or other port facilities, coastal terminals, wharves, breakwaters, sea walls (...)" as well as any type of TII that has this type form and is considered as part of the Port. See also from the Office for Ocean Affairs and the Law of the Sea, Baselines: An Examination of the Relevant Provisions of the United Nations Convention on the Law of the Sea, United Nations Publication, Sales No E.88.V.5*, 1989, pp. 56ss.

In accordance with article 60[49], the relevant provisions for the category of TII have been included, stating that:

"(…) a) artificial islands; (b) installations and structures for the purposes provided for in article 56 and other economic purposes; (c) installations and structures which may interfere with the exercise of the rights of the coastal state in the zone (...)"[50].

This is a broad spectrum that attributes to the coastal state the right to construct, license and regulate TII, also granting it to third states or private individuals as potential users[51].

Article 147 can be characterized as a prototype for the TII, where beyond the zones of national jurisdiction the extensive negotiation mentions "Installations used for carrying out activities in the Area", without including artificial islands (Nandan, Lodge, Rosenne, 2002), thus explaining that use at great depths and in difficult sea conditions differentiates the space that is related to the EEZ and the continental shelf (Nandan, Lodge, Rosenne, 2002)[52].

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49 Specifically, the content of article 60 is also applied to article 80 which originates from the Continental Shelf Zone.

50 Which is contrary to the relevant convention that has to do with the continental shelf and has an application to "installations and other devices" according to article 5. So the technical islands have taken the position and not the form of the devices with a broader features that in a comparative way has to do with the provisions of article 60.

51 Convention on the Continental Shelf of 1958 had a more explicit, clear and restrictive character in accordance with article 5, par. 2 where it stated that: "(...) the coastal state is entitled to construct and maintain or operate (...)" and the rights of third parties where excluded.

52 Referring and reading articles 47 and 60 which have to do with the TII and the space related to their use the right of construction, the safety zone and the rights of third states and other activities do not affect the relative delimitations of the maritime zones. Specifically the COLP Commentary vol VI also states that: "(…) the issue of installations used in carrying out activities in the Area. This provision is closely related to articles 60 and 80, dealing with artificial islands, installations and structures in the exclusive economic zone and on the continental shelf respectively. Care was

Article 258 deals with the use and scientific marine research. The definition "scientific research installations or equipment" concerns the use and certain provisions of article 147 (Nordquist, Rosenne, Yankov, Grandy, 1991)[53], as well as articles 259 to 262 (Nordquist, Rosenne, Yankov, Grandy, 1991; Proelss, 2017). These are articles that deal with use, in combination with terms where the content of the provisions and the structure allows considering the TII, as a type of construction, that assigns specific legal elements through variations, often causing considerable confusion in the interpretation of the text.

As subsidiary articles we can mention the following: article 56, par. 1, lett. b., which allows the creation of TII over the EEZ and the continental shelf; article 79, par. 4 which states that TII do not have to do with the presence of submarine pipelines and cables for the continental shelf[54]; article 111, par. 2 related to the right of prosecution for violations concerning the area of the EEZ and the continental shelf as well as the TII safety zones.

The continental shelf installations have been applied to the continental shelf zone (Baird, 2009), where seawater has not been included without establishing a new term;

taken to ensure that the provisions of paragraph 2 were consistent with those of article 60, which sets out the general principles of installations and structures (…)".

53 Article 147 and 60, which referred that: "(…) Drafting Committee proposed that since this article was a repetition of matters dealt with in article 60 it might therefore be replace by a reference to the relevant paragraphs of article 60 (…)".

54 This is a provision that is absent from the EEZ Part (V).

Article 194, paragraph 3, c regarding pollution and installations and devices for the exploitation of natural resources in the seabed, subsoil of the EEZ and the continental shelf.

Article 194, paragraph 3, lett. d) deals with installations and devices operating in the marine environment and in an area where it may occur[55].

Article 208, paragraph 1 adopts the relevant legislation for the protection of the environment, where it comes from activities of the seabed of the EEZ and the continental shelf.

Article 214 has to do with the obligation to apply the relevant legislation for the protection of the environment and the activities of the seabed of the EEZ and the continental shelf, as defined by the relevant article 208.

Article 246, paragraph 5, c, concerns the licensing of a third EEZ state, a continental shelf in a coastal state for the approval to be given to the construction, operation and use of TII, as defined by article 60, which is not related to economic, speculative purposes that exclude the use of the installations since par. 1, lett. b) has to do with artificial islands and with constructions, installations that hinder the exercise of rights with the coastal States (Bourtzis, Rodotheatos, 2012).

Article 145, par. a) refers to the authority of the international

55Specifically, article 194 has not included the term artificial island, therefore a dual approach is followed for the activities of the EEZ and the continental shelf referred to in the technical islands and articles 208 and 214, thus leaving a large interpretive gap.

seabed to proceed with the relevant legislation for the protection of the environment and pollution in relation to activities on the international seabed by “installations, pipelines and other devices”.

Article 153, paragraph 5, refers to the installations of the international seabed authority related to the area and to activities as determined in accordance with the provisions of Part XI (The Area) of the Convention.

Article 209, paragraph 2, with the obligation of the state to legislate and protect the environment against pollution arising from activities on the international seabed involving “installations, structures and other devices”, highlighting a relative inconsistency of the Convention because the original article refers to the use of installations and the addition of related structures.

Article 249, paragraph 1.a & g refers to the presence of the representative of the coastal state for the use of a Scientific Research Facility (SRF) by a third state or by any other competent international organization within the area of the EEZ and the continental shelf. A special obligation for a third state is to remove the facility when the relevant activity is completed.

Article 259 refers to the EEZ and the territorial sea zone where it affects and has to do with the delimitation of the zones of national jurisdiction

Article 260 refers to the safety zones directly. Therefore, the construction of technical installations may constitute an obstacle to navigation.

The subsidiary articles, consequently, deal with the character and evolution of the law of the sea in relation to the territorial sea and the continental shelf, where the EEZ and the coastal state have to do with the rights of third states and the freedom of the high seas. The use of TII within the territorial sea over a long period takes on a customary character and does not apply to other zones where the existence and relative use of TII was a prerequisite for the law of the sea.

There are other subsidiary articles that replicate the relevant provisions provided for in article 60 within the coherence of the legal framework for the technical term TII. The categories of the articles have a distinct character and are not involved in other different groups but in specific definitions for Artificial Islands and Installations, which are characterized as “platforms or other man-made structures at sea”, and which are within the definition of “dumping”.

In parallel, article 19, par. 2.k, refers as a violation to innocent passage for any act that has to do with the installations of the coastal state.

Article 21, par. 1.b grants the coastal state the right to have the relevant competence for the protection of installations within the

territorial sea and violations of innocent passage.

Article 87, paragraph 1.d constitutes the basis for the right to construct TII and the high seas as special cases (Nandan, Rosenne, Grandy, 1995)[56], stating that:

"(…) freedom to construct artificial islands and other installations permitted under international law, subject to Part VI (...)".

The reference to the EEZ tells us that the waters above the continental shelf are part of the high seas[57] and any other use concerning the use of TII in accordance with the provisions of article 60[58].

Article 94, par. 7 refers to the obligations related to the flag and to the obligation to conduct an investigation into accidents on board ships and the relevant installation in a third state.

The relevant accident occurs on the high seas and the relevant term "installation of another state" includes the TII with all the relevant articles as well as art. 87, par.1, let. d) (Nandan, Rosenne, Grandy, 1995). Also in the same context is article 109, paragraph 2, which deals with illegal emissions and the protection of the environment in the open sea not only from ships but also from floating installations.

The TII are included in subsequent and autonomous articles that have as a basic rule the provisions relating to them, i.e. with art.

56There was no corresponding provision in the Convention on the High Seas 1958. In the 3rd Conference the issue was raised for the first time by a joint proposal of three states (Ecuador, Peru, Panama) as early as 1973.

57See Art. 78, par. 1UNCLOS.

58See also article 147 and 258-262. These are articles that clearly refer to the spirit of article 60 and constitute a rule for TIIs that have to do with UNCLOS.

56, par. 1.b.i, art. 56, par. 1.b.iii, art. 1, par. 5.a & b, art. 87, par. 1.d and art. 109, par. 2 as special cases that follow the following article. The remaining provisions of other articles, such as art. 2, art. 77, art. 192, art. 137, art. 238, art. 17 and art. 90 have a general reference point and do not have any explicit reference to the TII. Article 80 refers to art. 60 and has a different origin from art. 77 as well as articles 194, par. 3d, 208, par. 1 and 214 which have to do with the protection of the environment and the obligation of the coastal state for the protection of the marine environment and the EEZ.

Regarding the creation and placement of artificial islands and installations

The law of the sea through UNCLOS does not prohibit but has taken a specific position on which states will be able to install artificial islands. Coastal states, landlocked states, archipelagic states and geographically disadvantaged states as categories that can request permission for the creation of an artificial island, it is enough for it to belong to the relevant jurisdictional zone to request the relevant licensing and subsequent registration.

We are talking about relative and special rights that concern landlocked states and ensure physical access to the maritime space and the rights of use as well as the EEZ in accordance with art. 58, para. 1 as well as the high seas according to art. 87

and the international seabed based on art. 141. Thus, the creation of a TII has to do with clear rights in a landlocked state, where it has created a TII with several obligations. In parallel, Art. 60, par. 1 UNCLOS states that:

"(…) the exclusive economic zone, the coastal state shall have the exclusive right to construct and to authorize and regulate the construction, operation and use of (…)",

with a power that has to do with the continental shelf, where according to internal waters, the territorial sea and the archipelagic waters it is self-evident that related to the coastal state and it exercises a full and exclusive sovereignty.

Those who can participate first are the member states of the convention and not private individuals[59], as the same applies to the right to the flag of the ship[60] without any other details[61]. Naturally, any private individual has the right to pursue any activity in accordance with national legislation and the procedures provided for so that the TII may acquire the nationality it needs in an appropriate manner[62].

Licensing and registration have a technical and bureaucratic

59As far as the international seabed is concerned, there is no relevant reference to states where they have to do with article 147, par. 2, lett. e) "(...) installations do not possess the status of islands. They have no territorial sea of their own, and their presence does not affect the delimitation of the territorial sea, the exclusive economic zone or the continental shelf (…)". We are talking about a clear state right.

60Art. 91, par. 1UNCLOS: "(…) every state shall fix the conditions for the grant of its nationality to ships, for the registration of ships in its territory, and for the right to fly its flag (...)".

61Art. 91-92and 94 UNCLOS.

62We speak about Art. 109, par. 3, lett. c) UNCLOS, which is referred to: "(…) state of registry of the installation (...)".

character from state to state, as there is no unified framework, and as is logical, the relevant procedure has a corresponding institutional and uniform framework as a special procedure, as does the phenomenon of using the flag of convenience (Esmaeili, 2001)[63].

Similarities and differences between ships and artificial islands and installations

The relevant licensing and registration for a TII determines, which structures are associated with the specific regime. The relevant treatment has a wide variety of legal aspects.

The ship registers and the special registers that the states have are not a legal definition suitable for the concept of the state, since TII belong to the discretion of each national order, which determines the content accordingly and with fixed and semi-fixed installations, where the relevant legal regime becomes even more complicated.

The registration function is fixed, self-sufficient, auxiliary in cases of general navigation and as a basic element for the concept of the ship, where it gives another dimension to the installations making the classification of ships a separate category. For example, semi-fixed installations of ships in Finland are considered as a separate category, where as in the

63Like Australia, Great Britain, Belgium, Russia.

USA and the UK it is based on fixed ones that consider ships in a transport/navigation phase (Esmaeili, 2001).

The licensing and categorization of a TII as a ship is different from when it is in the process of constructing a national legal framework. TIIs construct the straits of the national territory and are in interaction with activities, where for the actors legal problems arise from various aspects related to protection, labor rights, safety issues at sea and not only, etc.

The legal texts have a different position on licensing, registration and with everything that starts with the construction of a TII. The needs of the user determine the operation of the TII that adapt the specifications and obligations. This is a creation of a TII that is related to issues of the law of the sea such as siting and construction.

Siting, baselines and zones of national jurisdiction

The siting and placement of technical procedures for licensing and registration are linked to the artificial construction phase, the volume and shape of the TII, the duration of its life as a construction of a long-term assessment and use depending on the use, experience and readiness of the coastal state for the needs of the market.

The use of the TII does not give absolute priority to the maritime space due to the natural and anthropogenic constraints

that determine the point of placement. The relative physical indication is made within the zones of jurisdiction of each state (Ardron, Gjerde, Pullen, Tilot, 2008).

We thus have certain cases where countries follow general maritime planning and specific maritime spatial planning, giving particular interest to the maritime space that it uses through national procedures for exclusive and common use, in accordance with the zone of jurisdiction at the national level for countries that do not have relevant coastlines, extended zones of national jurisdiction, and where the opposite applies in terms of restrictions and size with the volume of use and relevant planning mainly in the North Sea region (Degnbo, Wilson, 2008), such as the level of environmental protection. Restricted use predetermines the construction of TII with great precision, locating the set of marine activities, where some consider them important and proceed to appropriate spatial planning in each specific case, where respect for various natural and legal restrictions, such as the creation of TII, is followed as a general rule.

The creation of an TII has to do with the birth, the time point at which it is constructed, while fixed installations, that are made on land and in the sea area, as well as semi-fixed ones, have a point of construction on land and then placement.

An artificial island has rights and obligations after construction

procedures about the reservation of an area for construction works[64]. However, fixed installations, from the moment they are placed on the seabed, cannot then be moved[65]. Semi-fixed installations, during transport and movement, can be considered as ships and the installation stabilizes their position for the period of time they remain there. The installations are obliged to mark and warn, as is the case with artificial islands[66], as well as the establishment of the relevant safety zones[67]. The relevant procedure has to do with the notification of a complete, partial removal from the TII[68]. The delimitation and marking of the TII for use and the relative safety for legal reasons exists and thus signals the birth of a TII.

64See Article 60, par. 3 UNCLOS, which affirmed that: "(…) notice must be given of the construction of such artificial islands (...)". We also mention an obvious example from the Republic of Cyprus, where it states about EEZ that: "(…) safety zone means the area around installations, structures, or artificial islands which are intended to be placed in or already existing in and/or above the Exclusive Economic Zone and/or the Continental Shelf (...)", art. 2, para. 1, The Exclusive Economic Zone and the Continental Shelf Laws, 2004 and 2014, Law 97(I) of July 11th 2014.

65IMO/GA Resolution A.765(18), Guide on Safety of Towed Ships and Other Floating Objects, Including Plants, Structures and Platform's Substructure on Sea, 1993.

66Art. 60, par. 3UNCLOS: "(…) notice must be given of the construction of (…) installations or structures" and article 147, par. 2, lett. a).

67We refer to Art. 60, par. 4 UNCLOS which has to do with the continental shelf and the EEZ, which is followed in time by the IMO decision (IMO/GA Resolution, A.671(16), Safety Zones and Safety of Navigation Around Offshore Installations and Structures, 1989), where it states that "(...) early Notices to Mariners (...) to advise vessels of the location or intended location of offshore installations or structures, the breadth of any safety zones established and the rules which apply therein", Art. 1, para. 1, IMO/ GA Resolution, A.671(16), Safety Zones and Safety of Navigation Around Offshore Installations and Structures, 1989. Article 147, par. 2, lett. c) for the International Seabed and article 260 for Scientific Research Facilities.

68See Art. 60, par. 3UNCLOS and Art. 1, par. 1, IMO/GA Resolution, A.671(16).

Are there any legal, physical constraints on the location of a TII?

The zones of national jurisdiction and the areas beyond national jurisdiction procedures for the selection and location of a TII are associated with constraints on their location. The general constraints are of a physical nature such as geology, geomorphology, the existence of local phenomena such as tides, seismicity, currents, etc., as well as the existence of elements that have to do with protection such as underwater antiquities, sites of significant value for national security, defense, protected areas are related to economic activities such as tourism, fishing, etc.

The presence of such elements is linked to the evaluation by competent national authorities, who will decide on the feasible way of construction and determination for necessary conditions such as national legislation, international commitments for each state. The study, the restrictions according to the law of the sea have as objective purpose the coexistence of the TII with the corresponding uses of the maritime space.

The marine waters have to do with the coastal state, with the zone where there are no general restrictions and there is full and exclusive sovereignty. There is no right of free navigation and the right of access to ports (Tanaka, 2023), which sets the

general limitation with the exception of the case of adopting straight baselines which, according to Art. 7 UNCLOS, falls under the regime of the territorial sea, thus applying the regime of innocent passage in the same way as it concerns the territorial sea. As a zone of full sovereignty for the coastal state that limits and affects the TII.

The innocent passage of ships and of all states through a simple passage, as well as for passage with a destination, is the starting point for internal waters, ports and anchorages, where coastal states are obliged without any discrimination[69].

As for the innocent passage, it is the obligation of the coastal state to preserve it and to obstruct the passage of ships of foreign flags[70] as it presents the public with the risk of obstruction to navigation within the territorial sea[71]. Coastal states are careful and prevent passage through the mass construction of TII, where they inform in a timely manner the construction process and the existence, operation of the TII.

The enshrining of the relevant right of innocent passage to TIIs has to do with the port facility. Coastal states and passing ships through the UNCLOS Convention concern sea lanes and traffic separation schemes as a practice in the event of dealing with the concentration of TIIs and the safety of navigation in such

69 Art. 18, par. 1 UNCLOS.
70 Art. 21, par. 1 UNCLOS.
71 Art. 21, par. 2 UNCLOS.

areas[72].

Innocent passage applies to the territorial sea, archipelagic waters and states[73]. Archipelagic waters are established through sea lanes, which foreign ships must pass, as well as traffic plans that separate the safe passage of ships from narrow channels[74]. An archipelagic state can determine the traffic of ships through the waters under its sovereignty and exclude the navigation of TIIs as well as regulate, exclude from unwanted actions.

The existence of routes, plans is of decisive importance because new TIIs are created. As for the contiguous zone, it is silent on the issues related to the placement of TIIs. The contiguous zone as well as the provisions on the continental shelf and the EEZ refer in an analogous manner to the coastal state which has priority for the creation of artificial islands and to installations which, according to Art. 56 UNCLOS, are related to economic activities and affect the coastal state (Liacouras, 2006)[75].

Within the EEZ, the freedoms of the high seas apply, limiting the relevant interests of the coastal state[76]. Among the regulations for the coastal state, the exclusive right has to do with the placement of the TII and the safety zones around it to

72 Art. 22 UNCLOS.

73 Art. 52 UNCLOS.

74 Art. 53, par. 1 UNCLOS.

75 Art. 60, par. 1, lett. c) UNCLOS.

76 Art. 56, par. 2 UNCLOS: "(…) exercising its rights and performing its duties under this Convention in the exclusive economic zone, the coastal state shall have due regard to the rights and duties of other states and shall act in a manner compatible with the provisions of this Convention (…)".

prevent the relevant use of the recognized routes, i.e. routes that are necessary for international navigation[77].

The continental shelf and the provisions referred to in article 60 have to do with the superjacent waters and the status of the high seas, as well as with the rights and freedoms related to it[78].

The high seas together with the subsoil are two elements, which to a large extent are found together and cooperate in the construction of a TII on the high seas and in the express freedom where the limitation respects the provisions of part IV, the Continental Shelf[79] as well as the interests of other states with regard to the high seas and their rights in the international seabed[80]. These are regulations for artificial islands and fixed and semi-fixed installations that are not in contact with the seabed and their operation.

The international seabed concerns the TII and the activities provided for in the provisions of UNCLOS[81]. As for the installations, they are located on the international seabed and do

77 Art. 60, par. 7 UNCLOS.

78 Art. 78 UNCLOS.

79 Art. 87, par. 1, lett. d), UNCLOS.

80 Art. 87, par. 2, lett. d), UNCLOS.

81 The relevant term of use referring to "activities in the area" is also used in Part XI of UNCLOS without, however, including a specific definition of it. The relative reading of the articles makes us realize that the relevant activities have to do with the relative exploitation of natural resources for the international seabed. We refer to Art. 147, par. 1 UNCLOS where it states that: "(...) activities in the area shall be carried out with reasonable regard for other activities in the marine environment" while par. 3 in "Other activities in the marine environment (...)" thus separating the references that have to do with Articles 150 and 152 UNCLOS and that have to do with the common heritage of humanity.

not obstruct the sea lanes in relation to international navigation and the zones that have to do with the activity of fishing[82], the adjacent safety zones that impede the access of ships to sea zones in relation to navigation and the length of the sea lanes in the sea[83]. For each TII, other activities and the general restriction for the relevant area are used[84].

As far as coastal and third states are concerned, mainly the straits of international navigation, the bays, historical waters, gulfs concern the zones of national procedure where mainly the straits grant transit[85].

The convention obliges the strait and coastal states to impede passage and transit, demonstrating thus to the public the danger related to navigation (Nandan, Anderson, 1989)[86]. This is a positioning technique that concerns the convention as well as the creation of sea lanes and shipping separation schemes as a safe location for the use of the straits of international navigation.

82Art. 147, par. 2.b, Civil Code. In addition to the traditional Freedom of Navigation, the drafters of the FTA felt the need to make explicit reference to that of Fishing, as large fishing grounds are located in the High Seas and far from the National Jurisdiction Zones.

83Art. 147, par. 2, lett. c) UNCLOS: "(...) configuration and location of such safety zones shall not be such as to form a belt impeding the lawful access of shipping to particular maritime zones (...)". It is about the case of the international seabed where the TII have to do with miles from the coastlines as well as with zones of economic interest where they occupy and are related to the open sea and are close to the coastal zone. The states preferred to keep their respective interests in this way as well as to set their own limitations.

84See Art. 147, par. 3UNCLOS affirms that: "(…) other activities in the marine environment shall be conducted with reasonable regard for activities in the area (...)".

85We also have the reference to "Plus Transit" as mentioned in Articles 34 and 38 of UNCLOS.

86Art. 44 UNCLOS.

Bays and coasts belong to a state where if the delimitation is made according to the straight baseline, it makes the area, i.e. internal waters, further restricted (Tanaka, 2023).

The historical bays are included in the category of historical waters, i.e. in an institutional framework where customary rules and the location of TII have discretion for coastal states (Churchill, Lowe, 1988).

International baselines and use within national sovereignty zones are capable of affecting zones of national jurisdiction, thus preventing abuse of rights, as for TIIs, where states lead a competition for the conquest of the oceans. In this way they could be characterized as landlocked states, where they could have a zone of national jurisdiction from the moment a TII was created on the high seas.

Zones of economic interest prohibit restrictions and influence on baselines. TIIs have nothing to do with a regime concerning natural islands and the delimitation of the territorial sea, the EEZ and the continental shelf[87]. The structures must have the function and creation in a vital space, where the users of the maritime space control the security zone without having the sovereignty of the state.

The problem of the TII is that they encounter several difficulties due to the sovereignty that has to do with the coastal states

87 The same relevant articles are 60, par. 8, 147, par. 2, lett. e) and 259.

where they are located. TII have rights for the protection of the coastal state as referred to in Art. 21, par. 1, lett. b) UNCLOS. According to which the coastal state is recognized as having the ability, the capacity to be able to legislate for the relative protection of the installations within the territorial sea zone without, however, explicitly providing the baselines.

As we have already seen, Art. 11 of UNCLOS states that external port works have the form of TII[88] and are part of the port complex of the coast for the purpose of delimiting the coastal zone, in contrast to the TIIs, which are located far away and are not considered permanent port works nor part of the natural baselines that enter as a limit to the extent of the TIIs.

As we understand, the TII cannot constitute a point of the baselines since, according to Art. 7, par. 4 UNCLOS, they are also drawn from reefs, where lighthouses, as well as other installations are located in this way on the surface of the sea (Churchill, Lowe, 1988)[89].

The type of installations, through relevant explanations from the

88The UN Office for Ocean Affairs and the Law of the Sea states in a report that: "(...) harbour works make have the forms of jetties, moles, quays or other port facilities, coastal terminals, wharves, breakwaters, sea walls, etc. (...)". UN Office for Ocean Affairs and the Law of the Sea, Baselines: An Examination of the Relevant Provisions of the United Nations Convention on the Law of the Sea, United Nations Publication, Sales No E.88.V.5*, 1989, 56.

89Reference is made to Art. 47, par. 4 UNCLOS regarding archipelagic baselines. However, there is no relevant article for the physical baselines when it comes to the setting for scopes. In parallel, Churchill and Lowe state: "(...) it should be noted that in limited cases low-tide elevations can be used as basepoints in constructing straight baseline system (…)".

UN Office for Ocean Affairs and the Law of the Sea, specifically mentions two forms such as

"(…) one, they could be towers and buildings which look alike a lighthouse without serving any purpose specifically connected with navigation; and two, the similarity could be related to the function of lighthouses, by means of warning navigators of danger and assisting them in fixing their position (...)"[90],

as a route where the use of reefs as baseline points can accommodate installations but not artificial islands, where there is no relevant reference to open space, that includes this category, since they are located fully or partially within the territorial sea (Roach, 2015)[91].

The baselines have as their demarcation point the closure of bays and the coasts where they are part of a state and the TII exist. The measurement of the surface as the depth of a bay, according to Art. 10, par. 3 UNCLOS, the:

"(...) area of an indentation is that lying between the low-water mark around the shore of the indentation and a line joining the low-water mark of its natural entrance points (...)".

The physical points of entry affect the existence of TII and can constitute a point of the straight line, which is based on the more general logical basis of TII, as baseline points, including also the ports according to the laws, which limit according mainly to the

90 UN Office for Ocean Affairs and the Law of the Sea, Baselines: An Examination of the Relevant Provisions of the United Nations Convention on the Law of the Sea, ibid, p. 25.

91 See Art. 13 UNCLOS. Inside the territorial waters zone, the scopes have to do with the sovereign territory of the coastal state, where they are outside the territorial sovereignty zones and subject to the sovereignty of any state only in the event that when and if they want to host any TII. In this way, the jurisdiction, sovereignty extends beyond a TII and not within, around the maritime space.

national law every result which is accepted (Westerman, 1987).

The operation and duration of the TII

We spoke in a previous paragraph about the life cycle that an IIS may have. A duration that can last from a few weeks to several years. The installations have a specific space and time object[92], as well as the construction materials must be ephemeral[93] and operate for a short period.

The practice has shown that the installations and artificial islands have a long-term use and their maintenance is even greater for a use that is maintained over time[94].

TIIs are not the same as islands and the status of sovereignty they have as issues of jurisdiction and competence have various uses in different areas of the seas and oceans through rules derived from international law are not very clear but neither can they be seen.

It is important that territorial sovereignty is overlooked in TIIs and there are cases where states interpret the rules with considerable skepticism according to the interests they have to do with territorial sovereignty.

92 We refer to semi-permanent and permanent installations that have the possibility of new installation, relocation more than once.

93 Materials used were initially wood, which had limited use, and technical islands are created on pieces of ice.

94 The construction and maintenance of technical islands are much more expensive than facilities where the use that changes after the first implementation of the planned work is widespread.

The recovery of land from disappearing states, as well as those, where sovereignty over maritime space is a phenomenon, where the existence of consequences resulting from limitless climate change and extreme weather phenomena also has to do with the politics of coastal states, particularly on the Asian continent.

In the 1958 Conventions on the Territorial Zone there is no reference to the term "Artificial Island" and as far as installations are concerned it is limited. Reference is made to permanent port works[95], installations on reefs related to base points[96], as well as in the Convention on the Territorial Zone and the Contiguous Zone, as they are also mentioned in UNCLOS. For the continental shelf, the Convention refers to the relevant right to construct, maintain and operate installations only for those necessary for the exploration and exploitation of natural resources[97].

The status of the High Seas in the relevant Convention does not refer to TII, because the freedom to construct TII is guaranteed by Art. 87 UNCLOS. For the territorial sea, states consider as sufficient the full and exclusive sovereignty over the continental shelf and is feasible for the use of technical installations as well as for any use for exploration and exploitation, mainly for scientific research and for the right of establishment for coastal

95 Article 8.
96 Article 7, par. 4.
97 Art. 5, par. 2, Convention on the Continental Shelf.

states.

The great changes in technology resulted in new technical, economic and political developments where through the form of TIIs they had as their ultimate goal the greatest depths and technical constructions outside the zones of territorial sovereignty although many times the state ceased to have the monopoly for the exploitation of natural resources (Kieth, 1977; Woodliffe, 1978; Balloun, 2011-2012; Fatch, 2014).

The gaps over time continued to be quite large at the international level (Johnson, 1951; Melamid, 1957)[98]. The issue of sovereignty and jurisdiction of TIIs was discussed in 1964 when the Radio-TV Nordzee broadcasting station built a fixed installation within 6 nm of the Dutch continental shelf known as R.E.M. Island.

The purpose of the radio and television stations on the high seas was to avoid taxation, to issue new broadcasts and copyrights as well as to monopolistic interests and interests towards European states (Hunnings, 1965)[99].

98The spread of TII which had started before 1958 had to do with the oil industry mainly. First of all, a retrospect is made to the term with a legal texture of the technical islands where they include constructions, islands, installations, clarifying the terms at an international level. The 1958 agreement has nothing to do with technical islands but with facilities, which is indicative of the relative confusion it had to deal with at that time. This is how the preliminary processes of UNCLOS were elaborated, where they comment above all on the regulations that have to do with the exploration and exploitation of natural resources.

99On April 1965 Hunnings reports over a dozen related incidents in the North Sea off the coasts of: Denmark, Sweden, Holland, France and Great Britain. Only three of these have included relevant use for maritime installations, such as Radio-TV Nordzee and Radio Invicta and Radio Sutch/City since they broadcast maritime

The R.E.M. Island was an installation and not a ship (Robertson, 1982). It was located within a zone of national sovereignty without interfering with natural resources and had no relevant permit.

No legal basis was found at the international level but it was followed by the North Sea Installations Law, which was compatible with the rules of international law and the law of the sea, following a relevant vote in the Francois Commission, which had existed since 1953 and gave opinions on draft international agreements as well as was later used by the United Nations International Law Commission (Van Panhuys, Van Emde Boas, 1966).

The legal vacuum did not consider activity on the high seas as illegal[100], invoking as vital interest and in an auxiliary way the concept of proximity (Robertson, 1982; Kwiatkowska, 1989)[101]. The Netherlands stopped the operation of R.E.M. Island even though no state protested against the application of any specific law (Van Panhuys, Van Emde Boas, 1966)[102] but only because there were strong criticisms (Robertson, 1982).

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installations in the Thames Estuary in Great Britain.

100 It clearly refers to the Convention on the High Seas based on article 22, where they have peace as their main priority.

101 Robertson affirmed that: "(...) installations constructed on the bed of that part of the North Sea which falls outside the territorial waters and within the boundaries of that, part of the continental shelf appertaining to the Netherlands (…)". Kwiatkowska states that the Netherlands' jurisdiction over fixed installations has to do with the continental shelf of independent use.

102 According to the authors: "(…) no other state protested this action (...)".

The Netherlands relied on general legal terms that have to do with sovereignty, sovereign rights and jurisdiction according to the principles of international law (Van Panhuys, Van Emde Boas, 1966).

In 1966, another special situation of artificial settlement was noted where Roy Bates, a former British Army officer, occupied a naval fort, Roughs Tower, on an abandoned military installation 7n.m. from the British coast[103].

The purpose was to create a radio station, namely the re-creation of Radio Essex, which was originally based at Knock John Towers and which over time stopped and moved to British territory (Grimmelmann, 2012), as well as the adoption of the Marine Broadcasting Offences Act, which stopped its relevant operation in the summer of 1967. Bates himself, on 2 September 1967, named the fort as an independent state with the name "Principality of Sealand" based on the occupation of terra nullius[104]. Naturally, as expected, the British government challenged this specific act in order to stop the use of force[105].

The Attorney General brought a prosecution for a related

103 http://www.sealandgov.org/about

104 The installation in question was located in the open sea and had been abandoned by the competent British armed forces.

105 Grimmelmann reports: "(…) a) action against Bates for failure to enroll his minor child in secondary education, b) seizure of Bates' vessel by Customs for non-compliance with existing legislation, c) collection of a fine from previous conviction relating to illegal radio transmissions from Knock John Towers, d) seizure of Bates' vessel by Customs for pollution in Harwich Harbour, etc. but none of them succeeded (…)".

violation of the Firearms Act, but the relevant decision by the court had no positive result because the issue was that the auxiliary installation was not on British territory, since there was no admiralty jurisdiction and the relevant installation was rejected because it was not a British-flagged ship located in the territorial sea. Thus, there was no relevant jurisdiction for Britain and the firearms law used by the officer's son did not apply to British territory (Grimmelmann, 2012).

Over the next twenty years, Britain tried (Dennis, 2002; Grimmelmann, 2012) but without success regarding the relative legal and non-legal status of Rough Towers[106]. A solution was provided, when it became a member of UNCLOS and shifted the territorial sea from 3 to 12 nm. Thus, Sealand became part of British territory, although Bates continued to maintain that his island was a separate "sovereign nation" (Hibberd, 2011)[107].

The legal vacuum is evident. The broadcasting of radio and television signals raised the issue of TII being used for reasons other than port facilities and the exploitation of natural

106[07]Grimmelmann affirmed that: "(…) the United Kingdom cautiously avoided forcing the question of Sealand's status for the next two decades. Official policy reflected a pair of negatives. On the one hand, Sealand was not part of the United Kingdom, but on the other, the government did not regard it as a state. What it was has never been entirely clear (…)".

107[08]Grimmelmann affirmed that: "(…) the position of the United Kingdom was driven by a game of bureaucratic hot potato. Each ministry tried to describe Roughs Tower in a way that made it someone else's problem. Thus, the Ministry of Defense considered it to be within the Crown Estate's ambit, and vice versa, with the Home Office also disclaiming responsibility on the basis of statutory limits on police powers. The Treasury took the position in 1997 that the Tower was "a portable chattel which happens to be resting on the seabed (...)".

resources. The use, combined with the vagueness of the law and the limit of legality, had limited results in practice (Phylactopoulos, 1972; Heimans, 1974; Papadakis, 1977; Kieth, 1977; Samie, 1977).

The Netherlands, as we have seen, has tried to legislate by making a dynamic intervention, while Britain went against the user based on the legislation it already had without reversing the situation[108].

In 1961 the problem was addressed by the Legal Committee for Broadcasting and Television of the Council of Europe as well as by the Committee of Ministers, although the subject of the sea was outside the limits of the organization's activities. They relied on freedom of expression and information, even proceeding with an agreement entitled European Agreement for the Prevention of Broadcasts Transmitted from Stations Outside National Territories, 1965 (Woodliffe, 1965).

An agreement that made the obligation on ships, aircraft and all types of vessels, flying objects[109] and seabed installations optional[110], thus solving the problem on the territory of the state

108Sealand still exists after the passage of time but has not yet been able to have an international recognition as well as the effort to issue a relevant directive for those at sea where it establishes the exclusion zones for the facility where it reaches a distance that reaches 1nm from on 1 July 2006, restoring the 2nm range that existed until then. Sealand Bureau of Internal Affairs, NOTM 029/06: Modification of declared Exclusion Zone, 1st July 2006.

109Article 1.

110According to article 4, lett. b): "(…) in this Agreement shall be deemed to prevent a Contracting Party: (…) from also applying the provisions of this Agreement to broadcasting stations installed or maintained on objects affixed to or supported by

through the classic formula of territorial jurisdiction (Robertson, 1982)[111].

The agreement asked member states to take measures through specific actions against illegal emissions that had to do with the maintenance and repair of equipment, supplies, the transport of individuals and equipment from a transmitting material to related services for the transmitting stations that were related to areas outside national jurisdiction, by nationals, foreigners and in relation to their jurisdiction[112].

The convention had a small number of ratifications[113] given that the Netherlands had relevant legislation since 1964, Britain ratified it in 1967, i.e. two months after the relevant agreement entered into force (Grimmelmann, 2012).

The jurisdiction had to do with the zones of national sovereignty within a legal framework, where ongoing technological, social and economic development continued without limit as Samie also mentioned in this regard:

"(…) no established international law to properly regulate offshore installations, many fixed structures have already been constructed outside the territorial waters (…) those offshore installations constructed outside a nation's territorial boundaries may be in violation of international law (…)

the seabed (...)".

111 Robertson declared that: "(…) some new or revolutionary theory of enforcement, however, the agreement signified merely a mutual undertaking actually to take the appropriate measures which traditional theories of jurisdiction already allowed against acts or actors within their territory or otherwise subject to their jurisdiction (…)".

112 Article 3.

113 http://conventions.coe.int/Treaty/Commun/ChercheSig.asp?NT=053&CM=1&DF=&CL=ENG

legal vacuum, the law with respect to fixed installations will develop based on practical needs (…)" (Samie, 1977).

Within the framework of national jurisdiction and the protection of the rights of the coastal state, the Convention deals with the jurisdiction regarding the laying of submarine pipelines and cables of third states related to the continental shelf of the coastal state, as is evident in the EEZ and the continental shelf, where the relevant freedoms of the high seas apply. The obstruction of maintenance or laying[114] is linked to the approval of a course regarding the legislative jurisdiction, where the pipeline, cable enters the zone of national sovereignty and the continental shelf is used for the relevant operation of the TII[115].

The obligation of the flag state of the TII as well as the living biological resources within the safety zone is a provision that has replaced the general content as well as those related to the marine environment as it was evident from Articles 192-194 UNCLOS, which concern the total removal of the relevant installations that are beyond their use[116]. This is a measure that is not as strong and binding[117].

As regards also the freedom to construct artificial islands and installations in the high seas area (Esmaeili, 2001)[118], the

114 Article 4, Convention on the Continental Shelf.

115 Article 79, par. 3 and 4.

116 Article 5, par. 5.

117 Article 60, par. 3.

118 This is a provision that did not exist in the High Seas Convention of 1958, given that the list of liberties in article 2 is indicative and the construction of TII is feasible and compatible with the general principles of international law and the

freedoms of the high seas are registered in species that limit and presuppose in the case of TII, a situation we can say as sui generis, which is often quite difficult to analyze and understand with a first approach. Naturally, the relative freedom has to do with states and not with private initiatives of licensing by a state that concerns an international tort and entails international responsibility. This specific right has nothing to do with the national sovereignty of the licensing state, as the convention is clear according to Art. 89 which states:

"(…) no state may validly purport to subject any part of the high seas to its sovereignty (…)" (Esmaeili, 2001)[119].

The relative exercise of freedom in relation to the seabed is particularly important for TII[120] as it relates to national sovereignty and related combinations, such as the high seas and the continental shelf, which override the sovereign rights of the coastal state.

Third states and the EEZ have the right to enjoy the high seas, with particular respect for the sovereign rights of the coastal state (McConnell, 2012)[121].

interests of third countries. It is about an advanced technology that concerns the exploitation of resources in the open sea and this kind of freedom has not been included.

119On the one hand, we see the placement of structures that have permanent features on the seabed, i.e. technical islands, fixed installations and that prohibit any other part of the open sea from being under the sovereignty of the state. A permanent presence is not accompanied by claims of sovereignty and from the side of the state as well as other activities bring as evidence the stabilization of the equipment in the maritime space and does not mean at the same time the claim of sovereignty.

120Semi-permanent installations are excluded.

121Article 58, par. 1 refers to the freedoms that have to do with third countries and silences those that belong to the coastal state, namely fishing, scientific research

The high seas in relation to the international seabed serve rights that have to do with the common heritage of humanity through the principle of the international seabed, as well as the high seas and the continental shelf of the EEZ to prevail over the sovereign rights of the coastal state. This is a partial freedom of construction of TII on the high seas (Oda, 1968)[122], where its exercise can only be done in a careful manner and with ongoing negotiations with the coastal states (Orrego Vicuňa, 1989)[123].

These specific provisions concern cases where the delimitation of the EEZ has not been declared, there is no outer limit of the continental shelf and the continental shelf has not been finalized within relevant limits. The continuous pursuit on the high seas concerns zones of national sovereignty as well as those of economic interest[124].

UNCLOS refers to violations that deal with the sovereign rights

and the construction of TII where they have to do with the competences within the EEZ.

122Oda mentions the continental shelf: "(…) inherent in the adoption of the concept of the continental shelf is an inevitable modification of the entire concept of freedom of superjacent high seas. This modification requires the exercise of coastal jurisdiction in order to control the exploration of the continental shelf and exploitation of its resources. (…) Coastal states similarly should be able to prevent infringement by foreign vessels of their regulations regarding exploration or exploitation and to punish violators. In this respect, the superjacent waters of the continental shelf should to some extend be given a status similar to that of the contiguous zone (…)".

123Also presented as exceptional is the case that has to do with the relative freedoms that have to do with the 60th equator, i.e. the marine area located in the Antarctic where the freedoms of the open sea apply there as well with limitations and with the relative conditions concerning fishing and the protection of the marine environment.

124Art. 111 UNCLOS.

of coastal states as well as the legislation on safety zone[125] as well as with the security of these zones with relevant repressive jurisdiction (Koroleva, 1990)[126]. As persecution where the safety zone affects its existence (Poulantzas, 2002).

As regards bays, the provisions for internal waters, which are located on the baselines, apply. Regarding scientific research in marine space, the activity, beyond the relevant provisions of national and non-jurisdiction, has to deal with a homogeneous framework (Guy, 2005) included in Articles 258-262 UNCLOS and in national rules[127]. States grant the relevant licenses for the use of their jurisdiction and sovereignty[128] depending on the location of state and non-interested parties[129].

All installations do not concern islands nor have a territorial sea zone and also do not affect the delimitations of the zone of national sovereignty[130]. The relevant zones around the TIIs are intended to protect and ensure the safety of users of the maritime space. These zones are necessary for safety, where the operation of the TIIs is feasible for hydrocarbons (Kaye, 2007)[131]. This is a

125 Art. 111, par. 2 UNCLOS.

126 According to Koroleva: "(…) coastal state the right to pursue foreign vessels for a violation of its laws and regulations in the EEZ is one of the most substantial innovations made by the 1982 Convention in the institution of the right of "hot pursuit" (…)".

127 Art. 258 UNCLOS.

128 Art. 258 UNCLOS.

129 Art. 263 UNCLOS.

130 Art. 259 UNCLOS.

131 For Kaye, the reference to paragraphs 4 and 5 of Art. 60 UNCLOS has to do with the relevant legislation regarding the protection of navigation.

creation of a non-mandatory nature, which is provided for by the continental shelf and the EEZ[132], the international seabed (Kaye, 2007)[133] and the relevant facilities participating in scientific research[134]. The territorial sea and internal waters do not refer to safety zones because the sovereignty of the coastal state allows the relevant measures (Harel, 2012)[135]. The freedom to construct TIIs in a High Seas is not consistent with any other restriction[136].

132The zones must plan the nature and operation of the TII as well as the relative extension that has to do with above 500 meters.

133According to Kaye: "(...) Art. 147, par. 2.b, of the Civil Code allows the establishment of a zone for the purpose of protecting navigation and the Facility, but without defining its scope. This gap, at least in terms of Activities in the Area, could also be covered by the International Authority, which is responsible for legislating for the operation of Facilities (…)". See also Art. 147, par. 2, lett. a) UNCLOS.

134See also article 260, where Safety Zones are optional and with a maximum range of 500 meters.

135According to Harel: "(...) driven by these provisions, the Coastal State is able to create zones that have a content similar to that of the Safety Zones outside the National Sovereignty Zones (...) vessels must comply with such laws and regulations. Accordingly, the coastal state may impose limitations on navigation of vessels in the vicinity of its offshore platforms in order to ensure the safety of those platforms. Such measures may require vessels to change their course or to follow instructions that may prolong their journey, as long as this does not unreasonably hamper their right to innocent passage. Under this authority, a coastal state could establish safety zones around its offshore platforms and prohibit unauthorized access to those zones (...)". The only limitation has to do with the relative area where the zone constitutes an obstacle to navigation according to Art. 24 UNCLOS, while if exceptional measures are taken the duration will be more limited according to Art. 25, par. 3 UNCLOS.

136The TII has the Open Sea where it covers the regimes of a subjective seabed, i.e. the continental shelf, the EEZ, the international seabed or the use for scientific research. The case of the international seabed and scientific research, where UNCLOS already refers to installations and artificial islands, remains unmentioned.

New forms of TII

As we have seen in the previous paragraphs, the use of TII had to do with certain forms of use, but over time their use was associated with newer forms. We are talking about land reclamation as a political choice and not a technical one, that concerns the pumping of water and the covering with natural materials, that is converted into solid soil. This specific process presents two forms (Stive, 2005): a) polder-style reclamations used in the coastal zone and on unstable soil as well as in residential and agricultural use and b) the related forms of elevated reclamations (Hooimeijer, 2011)[137], that is, the coastal zone and the height of the construction that accommodates the weight loads. The maritime space from a legal perspective requires artificial islands to be far from the coastline and the installations to be a continuation of it (Stive, 2005)[138].

Land reclamation concerns cases, where the lack of land is the answer to territorial sovereignty. On the other hand, land conservation is associated with coastal erosion, the impact of extreme natural phenomena and the rise of sea level. The

137"(…) polders are a special type of drained agricultural land typically found in low-lying coastal areas, river plains, shallow lakes, lagoons and upland depressions. Before impoldering, polder areas were either waterlogged or temporarily or permanently under water. An area becomes regime. This condition is accomplished by various combinations of drainage canals and dikes (…)".

138Stive affirms that: "(…) their general close vicinity to the shore, artificial islands are very similar to land reclamations into the sea, certainly when such reclamation is separated from the existing land by a waterway or channel, which is often for management purpose (…)".

continuous expansion of the territory of the state and the application of appearance in a complementary form aims to cover the basic, vital needs for the extension of national sovereignty in both territorial and maritime space.

The specific status of these TIIs is clearly related to state practice (Carleton, 2011)[139] due to the use of influence on baselines and zones of national jurisdiction. The examination of the legality of the relevant choices as outlined in Art. 11 UNCLOS concerns delimitation and demarcation (Carleton, 2011)[140]. Specifically, baselines are an option for the coastline[141], i.e. using certain criteria, such as:

"(...) straight baselines must not depart to any appreciable extent from the general direction of the coast, and the sea areas lying within the lines must be sufficiently closely linked to the land domain to be subject to the regime of internal waters (...) straight baselines may not be applied by a state in such a manner as to cut off the territorial sea of another state from the high seas or an exclusive economic zone (...)"[142].

The first criterion referes to the interpretations that have been recorded in cases where the provision has not been violated (Churchill, Lowe, 1998). The delimitation and definition of baselines, according to Art. 16 UNCLOS, are elements located

139According to Carleton: "(…) Dutch Coast also contains extensive areas of reclaimed land (…) which is considered to be part of the territorial sea baseline without complain from the international community (…)".

140It is about the port of Ras Laffan, where it has been since the day it was built as the outer limit of the coastal zone at 4.5 nm.

141"(…) where the coastline is deeply indented and cut into, or if there is a fringe of islands along the coast in its immediate vicinity (…)". Art. 7, par. 1 UNCLOS. It is a locally specific application where it has the possibility to combine the natural baselines as seen in Art. 14 UNCLOS. It is a clear object that applies as a prerequisite to an open option for coastal states.

142Article 7, par. 3 and 6.

on land, on the coastline and challenging the cases that are dangerous. The only option is that of states that disagree and follow a diplomatic, legal path under dispute through the points of the baselines, where as a direct dispute they have the territorial sovereignty belonging to a coastal state (IOC-IHO-IAG 2006).

The preservation and morphology of the structure of coastlines on a local scale is linked to the coastline and to the maritime space that protects and maintains the territorial territory in an indirect way per se thus preserving the baselines and zones of national jurisdiction. These are techniques that appear in disappearing states and as policies of diminishing states, where the relative reduction if we call it that of the territorial surface concerning the sea and a relative stage that has disappeared without the effect of disappearance that has to do with the total disappearance, the sinking of the land and the situation where the land has not been offered for human living due to threats that have arisen from the sea water.

Within this context, the strengthening of the coastal zone is linked to natural resources (Symmons, 1995), where human survival is related to economic activity, that is not only of vital importance for the populations of the areas but is also important from the point of view of the law of the sea, when an island territory has taken the name of an island with regard to Art. 121

UNCLOS.

As a different case is the rock where the basis of Art. 121, para. 3 may only have zones of national sovereignty where natural phenomena such as strong waves (Saengsupavanich and others, 2009)[143] prevent insular territories from coastal areas with low elevation. Internal waters or the territorial sea have the form of installations and more rarely have to do with artificial islands. This is a port installation where it is related to Art. 11UNCLOS. In no other case is there a relevant regulation that has to do with baselines (Soons, 1990; Carleton, 2011)[144].

Especially when they are far from the connection they are connected to the status of TII and the zones of national sovereignty. Another case of land reclamation concerns the interior of the atolls which has a dual purpose. On the one hand, the strengthening of the territories and the surface of land used as an option that has no limitation as to the extent and on the other hand the water areas of the atolls, which concern the internal waters[145] and are calculated as a landform within the

143Such as the detached breakwaters that have relative positioning near the coasts as in the case of Nakorn Si Thammarat province and in Thailand.

144According to Carleton: "(…) Convention is also silent on such issues as reclaimed land that forms coastline, and coastlines that have been protected artificially to mitigate coastal erosion (…) man-made constructions that form part of the coast (…) that are designed to protect the coast from erosion are accepted as being part of the normal baseline and it is acceptable state practice to use them as territorial sea basepoints as required (…)". Soons affirms that: "(…) artificial conservation of the coastline, including that of islands, is fully permitted under public international law: this is proved by abundant state practice (…)".

145Baselines: An Examination of the Relevant Provisions of the United Nations Convention on the Law of the Sea, 5-12.

process that has to do with the delineation of archipelagic waters[146].

Nowadays, the use of TII and their particular morphology is related to the creation of territorial formations that are made to avoid mixed techniques. This is an act that has as its tactic the transformation of territorial formations with the ultimate goal of their legal upgrading as well as the claim of formations usually of reefs that have as their goal the exploitation of straight baselines and the installations and infrastructures with which they form inferior islands after the sovereignty of their relative rights. In this way, the creation of new baselines that we cannot understand based on what legislation will be used near the coasts and national sovereignty zones aims to create pockets of national sovereignty through the zones' attempt to connect with economic interests, as well as with the high seas.

This specific tactic also concerns certain other elements such as: 1) converting shallow reefs and shoals as points of straight baselines[1] even though they are wholly or partly related to the territorial sea of a coastal state (Symmons, 1998; Tanaka, 2023)[2]. This is a choice where every artificial elevation has as its

146See Art. 147, par. 1 and 7 UNCLOS.

1Art. 13, par. 1UNCLOS.

2Art. 13, par. 2 UNCLOS where it explicitly mentions that the scope cannot have an Aegialite zone. In the past, Great Britain tried to claim sovereign rights from a rock called Rockall, which was located 290 nm from its shores. With relevant legislation from the 1970s, namely the Rockall Island Act, 1972 a de jure and de facto recognition and beacon placement from 1983 resulted in neighboring states withdrawing from 1997 thus recognizing the mistake on the merits.

ultimate goal legal claims (Xue, 2012)[3]. The only option would be to maintain the status quo regarding each formation, where it cannot necessarily recreate a TII. 2) converting rocks and islands from reefs with the ultimate aim of creating zones of national sovereignty[4]. The aim in this case has to do with the points of baselines as well as other sovereign rights, where the determination and placement of the TII on a reef is the only way to exercise sovereignty. Shoals, like all reefs, are associated with the territorial sea of the coastal state and the related claims that lie outside the zones of national sovereignty (Dzurek, 1996; Smith, 2010)[5].

3It is about the Okinotorishima rocks which are located at a distance of 350 nm from Japan. There is a record of four that have eroded and have not been surrounded by protective man-made structures during the period 1987 to 1993. In 1998, Japan put a research station near the arms that had the form of a lighthouse installation. For years, Japan has tried to create in a plausible manner sovereign rights of economic interest that have to do with neighboring countries and especially with China, where it reacted strongly.

4Reference can also be made to Swallow Reef, which is included in the Spratly complex and is controlled by Malaysia. It is about a Skopelos where in about 30 years (1980-2010) it is the case of a reclamation of land where it expanded and hosts military installations, residences, a research station, businesses, etc.

5It is about the Louisa Reef which is located 120 nm from the coastline of the Sultanate of Brunei, an area where it is the object of dispute by China and in the past by Malaysia as it is a shallow formation where it is not formed and defined and hosts a lighthouse who has been created by the Malaysian side.

Fig. 13: Louisa Reef

Source:http://www.ocean-fortune.com/UploadFiles/dynamic/2014/9/201409120715370869.jpg

This specific position has also found light through the International Court of Justice (ICJ), which stated that:

"(…) not established that in the absence of other rules and legal principles, low-tide elevations can, from the viewpoint of the acquisition of sovereignty, be fully assimilated with islands or other land territory (…)" (Liakopoulos, 2020a)[6].

3) turning rocks into islands with the relevant declaration of zones of national jurisdiction. In this case, land acquisition serves the needs of each state and has the character of

6ICJ, Maritime Delimitation and Territorial Questions between Qatar and Bahrain, ICJ, Merits, Judgment, ICJ Reports 2001, 101-102, parr. 205- 206.

attempting to claim state sovereignty over the formations within the maritime space.

The creation of airports, military outposts, shipping, etc. is associated with the use and service of national needs, such as security and defense with the ultimate goal of upgrading a rock (Dzurek, 1996)[7] as well as of places where human livelihood has to do with economic activity as an attempt to upgrade through equalizations of national sovereignty that are illegal for the TII (Tsaltas, Alexopoulos, Rodotheatos, Bourtzis, 2015).

The recovery of land through every form of possibility in practice has as its purpose the preservation, creation for the coverage of vital, basic needs that are accepted by the international community in a stage of forced character that revolves through territorial sovereignty.

Can land reclamation be abusive?

China has in the past and more systematically since 2014 attempted to transform the Spratly complex into 7 island

7We also mention the case of Fiery Cross Reef, which is part of the Spratly Islands and is located in the center of the South China Sea and has been claimed by China, the Philippines, Vietnam and Taiwan. China created a military outpost on top of it that had the form of an installation and from March 2015 it was revealed the land reclamation that had as its ultimate goal the creation of an artificial island to host an airport. According to China's side, BBC, China "building runway in disputed South China Sea island", 17/04/2015: http://www.bbc.com/news/world-asia-32331964 "(…) China's work on the [Spratly] islands mostly serves civil purposes apart from meeting the needs of military defense. China is aiming to provide shelter, aid in navigation, weather forecasts and fishery assistance to ships of various countries passing through the sea (…)".

formations, such as West Reef, Fiery Cross Reef, Subi Reef, Gaven Reef, Johnson Reef, Hughes Reef, Mischief Reef (Liakopoulos, 2004), laying the foundations for infrastructure, airports, fishing facilities, military bases, communications infrastructure, etc.

This is a policy of dispute with neighboring states for sovereignty over the entire maritime area in which they were located (Franckx, Benatar, 2011)[8], with ultimate goal the military control of the area, control of the reclaimed territories, and sovereign rights around them, with activities at both the political, military and legal level starting in 1990 (Dzurek, 1996) and reaching to the adoption of the Declaration on the Conduct of Parties in the South China Sea[9].

Disputes and continuous incidents in the area have not been lacking over the years, especially after the arbitration initiated by the Philippines (Schiutto, 2015; Witte, 2015)[10]. The main

8China, the main protagonist in the area, which wanted to have full control, issued a relevant map that included a maritime area with eleven dotted lines, which vaguely defines full sovereignty in the area. In 2009, China also responded to Vietnam's request for a joint request by Vietnam and Malaysia to the UN Commission on the Delimitation of the Continental Shelf, where it notified the UN Secretary-General of the relevant protest of the violation of its rights.

9ASEAN, Declaration on the Conduct of Parties in the South China Sea, 2002: https://asean.org/declaration-on-the-conduct-of-parties-in-the-south-china-sea-2/

10Specifically, an aircraft of the American Navy which was found in the open sea and in the International Airspace received a relevant message for their departure from the Chinese Authorities, while earlier the Vice President of the USA, J. Biden had stated that: "(...) the disputed waters of the South China Sea, the United States does not privilege the claims of one nation over another, but we do unapologetically stand up for the equitable and peaceful resolution of disputes and for the freedom of navigation, and today these principals are being tested by Chinese activities in the South China Sea (…)".

points of dispute and analysis were whether China was violating the sovereign rights of the Philippines regarding natural resources in the EEZ based on Art. 56 UNCLOS. Another issue was whether China had other claims on sovereign rights to island formations where its jurisdiction derives from Art. 121 UNCLOS. Also, whether China illegally claims some shallow formations that have to do with the seabed of the region (Beckman, 2013).

The decision aimed at international peace in the region, specifically in the South China Sea, as well as the environmental impacts and dangers that it may pose, especially when it comes to dredging where the use of chemical substances has negative consequences on fishing activity, reefs and marine mammals, i.e. on the protection of biodiversity and tourism in the region (Lyons, Hiu Fung, 2015; Langenheim, 2015).

Another particular case concerns Singapore and an island chain located on the Malaysian peninsula with a total area of only 600 kilometers, where after land reclamation, relevant reactions occurred (Koh, Lin, 2006)[11].

The Tekong Island formations are the result of an artificial union of seven island complexes, which will last for about twenty years (Koh, Lin, 2006). The Jurongs, located in the Strait of Johor, were related to Malaysia's reaction to the ITLOS

11"(…) Singapore has been reclaiming land since its early colonial days without attracting much attention from its neighbors (…)".

seeking provisional measures and arbitration based on certain key issues relating to Singapore's violation of Malaysia's territorial sea, the reclamation works that had to do with pollution, and the reclamation works that caused damage to the marine environment (Rothwell, 2007; Liakopoulos, 2021)[12]. The provisional measures resulted in the creation of a Group of Experts to advise on the differences.

The commission was dealing with Singapore's projects and acted within the time limits where the arbitral tribunal regained finality (Koh, Lin, 2006). The case was characterized as constructive and from a technical operational side and indirectly the policy of land recovery had as a reward the affected, neighboring states. The cooperation of both countries was tested through the creation of artificial islands reaching a surface of 14 kilometers on the western side of Jurong and through the territorial zone that was in the Malaysian area (Lee, 2015)[13].

(Follows): The states that have disappeared

The vanishing/disappearing states are the island states where their territory has to do with complete disappearance. There is no specific definition but this is the name given to the territory

12Malaysia v. Singapore. Case concerning Land Reclamation by Singapore in and around the Straits of Johor, ITLOS, Decision, Reports of International Arbitral Awards, vol XXVII, 2005, 133-145: https://www.itlos.org/index.php?id=104

13"(…) Singapore conveyed its concerns about the project on a number of occasions to the Malaysian government, asking for more information on the reclamation and construction works (…)".

who has suffered from subsidence and disasters to the infrastructures with the final stage the subsidence that succeed one another (Soons, 1990; Caron, 2016).

As a state to date there is none in international law, as the phenomenon of loss of territories, islands on a local scale considers it impossible to live on them (Yamamoto, Esteban, 2014; Nirmala, 2015)[14].

As forms of reduction, of disappearance of a state, there are threats that, in the narrow context of the concept of the state, have to do with its complete sovereignty.

The case of disappearing islands is a phenomenon where the island territory is located at the bottom of the sea and where adaptation mechanisms, such as the displacement of settlements to a much higher altitude, as well as the movement to another territory, the fortification of the coasts with natural materials are among the most frequent mechanisms for insurance (Yamamoto, Esteban, 2014).

14The disappearance of an island, as well as a state, is not a process that takes place from one moment to another. The phenomenon of the erosion of a coastline is normal and has to do with causes that have depth within an entire island and processes where the extensions and consequences are many and frequent. Total submergence has to do with a life cycle where it is the result of a process that lasts over time and is preceded by a gradual period where the submergence renders the neighboring communities as unsustainable as dangerous. The concept of the vanishing state naturally has measures that try to accommodate and suppress the vanishings in their totality. As different we mention Han Island, Papua New Guinea, where it has been found to be covered by a sea water that has to do with the tide as a result of human survival where external help seems to be difficult or even impossible. As for New Moore Island, in the Bay of Bengal, it is a maritime area claimed by India and Bangladesh that had been considered fully submerged since 2010.

Since the period of decolonization, the practice and adoption of sovereignty and citizenship has had to do with mobility in different states where the standard of living was aimed at increasing population, the exploitation of natural resources and an international level of exports, where consumption was driven by increasing environmental proposals and demands.

In this specific case, there is a large legal gap, since the process of disintegration of a state that has to do with the disappearance of its territory is not a phenomenon that can be easily addressed from a legal perspective. The only basis we have is the Montevideo Convention on the Rights and Obligations of States. Since 1933, a state must have as basic characteristics a permanent population, a defined territory, a government, and relations with other states, neighboring and not[15].

The relevant legal problems concern passive attitudes that do not have the will to reverse the phenomenon and the adaptation of infrastructures in another area as well as within the borders (Veitayaki, Manoa, Pio, Resture, 2007)[16].

Arriving at the exact opposite behavior that has to do with defensive works for soil erosion and their more general

15Art. 1 of the Convention and especially lett. (d) where it refers to international recognition by third countries, even though regional agreements nowadays have a customary character.

16Across the borders as a simple practice that has several difficulties at the same time given that third countries remain reluctant to take in those they have displaced. The question of the relative cost has to do with the citizenship of new and old rights as can be seen from the agreement between Tuvalu and New Zealand for the reception of 75 people per year.

reconstruction (Germanwatch, 2004)[17].

An aggressive attitude is certainly also distinguished with the ultimate goal of reclaiming land as a territory, where technical constructions are connected to the submerged surface and the construction of TII in the form of lagoon atolls that help in the construction of fixed and semi-fixed installations on a submerged surface.

The preservation of territorial sovereignty concerns the containment of populations and economic activities as a basis for the exercise of sovereign rights. As for the political stage, we mention the technical island of Hulhumalé with an area of 2 km, which has been created inside the North Male atoll and belongs to the Maldives complex. A project with a complete settlement which has to do with the airport at the same time of the country and an area that hosts a percentage of the total population[18].

The cost was quite high for this and the specific solution was not sustainable. The spread of artificial islands in areas with a littoral zone and in EEZs raises reactions where they host a population that has to do with the status of the island.

17From a technical point of view, the necessary land conservation has no different technical point of view since the measures of high cost and limited protection possibilities have an effective and limited way. The low altitude coastlines and rich fresh waters have to do with hydraulic works and defensive measures as a result of continuous floods and disasters where the continuous evolution of technology plays a decisive role.

18Housing Development Corporation Ltd., responsible for the execution of the work. Hulhumalé. Most ambitious land reclamation and urban development project undertaken by the Government of Maldives: https://www.hdc.mv/hulhumale/

The creation of installations on submerged areas is linked to the hospitality of activities and residences where the base on a shallow installation on Aves Island of the Navy "Simon Bolivar" had as its ultimate goal the relative recognition of the rights of the Aves area as an island where, based on bilateral agreements for the delimitation of maritime zones in the USA, the Netherlands and France (Oude Elferink, 1998) had caused protests in neighboring states which still consider Aves as a rock or simply as a form of installation. Some of the countries that are causing reactions are Saint Lucia, Saint Vincent, Grenada, Saint Kitts and Nevis, Antigua, Barbuda, and Dominica. (Haughton. 2015).

Even the practice of marking has as its purpose the consolidation of rights for the placement of sovereignty markers (Dzurek, 1996)[19]. It is the use of technical marking on submerged or submerged island formations that demonstrate the existence of a low, shallow surface that confirms the rights of the state to which they belong.

In this way, disappearing states are a means of demonstrating the sovereignty of the territories in a permanent way that aims to stop the phenomenon. It is a great economic cost where the use of sovereignty markers refers to data and rights where obligations arise from them (Yamamotp, Esteban, 2014).

19Jackson Atoll, Half Moon Shoal and Sabina Shoal, these are areas that were destroyed in 1995 by the Philippines.

Another technique of choice is the reconstruction of a submerged island formation, where the use of land reclamation and other defensive works aims to have the costs applied within the area of an entire island. From a technical and legal perspective, such a construction has to do with artificial islands that aim to apply the law of the sea (Park, 2004)[20].

Therefore, TIIs may be the saviors of disappearing states in an international context where they are affected by baselines, the status of the island, the disappearance of the state, and the choices based on the rules of international law, leaving open questions about the exercise of sovereignty in this type of TII and what happens if these islands are both sinking and have a population.

The main problem of this type of TII is the resources and the related territorial sovereignty, where the adaptation, addition of new rules provide that the use of TII secures rights from land and sea. The disappearance of these states and the related rights from land and sea have to do with disappearing territories that lead TII to be considered as targets according to Art. 13 UNCLOS. This status is now self-evident and exists in the land (Attenhofer, 2010)[21]. It seems, therefore, difficult to apply.

20Judge Choon-Ho Park has not accepted the placement of TII with the ultimate goal of asserting sovereignty over emerging land forms.

21Attenhofer affirms that: "(…) instances where the drawing of baselines to and from such elevations has received general international recognition (...)".

The internal and external limits of the maritime zones are depicted on official maps, and the existence of TIIs are symbols that have to do with sovereignty. The limits of the continental shelf are defined and any change that concerns drawing is unstable because the coastlines of both the external and internal limits of the zones of national jurisdiction deal with the zones of national sovereignty in relation to the continental shelf[22] where the extension of the drawing of fixed baselines applies, where rivers flow[23].

Overall, this is a sui generis situation based on the relevant idea of the more general framework of historical waters (Symmons, 2008). According to the views of Yamamoto and Esteban, through the relevant study of maps, the use of sovereignty markers has to do with the exercise of the duration of the jurisdiction of the TII and in conjunction with disappearing states (Yamamoto, Esteban, 2014).

22Art. 74, par. 4, lett. a), UNCLOS.

23Art. 7, par. 2 UNCLOS affirms that: "(…) the presence of a delta and other natural conditions the coastline is highly unstable, the appropriate points may be selected along the furthest seaward extent of the low-water line and, notwithstanding subsequent regression of the low-water line, the straight baselines shall remain effective until changed by the coastal State in accordance with this Convention (...)".

Technical Islands and Installations as the creation of new states

The exact opposite phenomenon to what we saw in the previous paragraph has to do with the creation of new states through the phenomenon of TIIs. Specifically, Menefee mentions how a new state can be created from an artificial island after operations concerning: a) “states” that have been created after reefs and shoals such as the cases of Atlantis-Isle of Gold and Grand Capri Republic located in the Atlantic Ocean, as well as the Republic of Minerva located in the Pacific Ocean, b) “states” on reclaimed land or other wastes located in shallow waters such as the cases of Abalonia and Taluga located in the Pacific Ocean and c) “states” as artificial constructions (Menefree, 1994) such as the cases of New Atlantis, in the Atlantic Ocean and Isola delle Rose in the Adriatic Sea and of course the case of Sealand located in North Sea.

The biggest problem with these islands is the reactions coming from the coastal states. A private company located in the Bahamas under the title Atlantis Development Corporation submitted various requests for permits to public bodies of the USA. Only Florida responded because it was within the borders of the state and because it had jurisdiction (Clanton, 2008), with the US Department of the Interior responding that the area was

not within the territorial limits of the USA[24] and with the State Department stating that the specific area is in the high seas (Clanton, 2008). This company went ahead with the creation of an independent state with the name "Atlantis, Isle of Gold".

In 1963, a private individual, Louis M. Ray, proceeded to create a state called the "Grand Capri Republic" (Erwin, 2007) after a request for dredging in Triumph Reef, Ray's company "Acme General Contractors Inc." He began the relevant work in 1965. His request was rejected and as a consequence, the relevant work that had to do with the plans of the relevant request (Menefee, 1994). The filing for injunctive relief in the South Florida District Court by the USA against Ray for the relevant cessation of the work was made within the same year based on the territory of the USA and for the construction of a relevant TII without a permit. Atlantis Development Corporation intervened because it considered it an infringement of its rights since it was the first person to discover the reefs in the area.

Both cases were based on an earlier case before the US Supreme Court where in Jones v. USA case of 1890, the Court relied on the Theory of Discovery of Territories by persons who

24It was the American President Reagan who, from 1988, proceeded to increase the external limit of the territorial Zone to 12 nm from the relevant coastlines, keeping the limit at 3 nm. Proclamation 5928, Territorial Sea of the United States of America, December 27th 1988: https://www.archives.gov/federal-register/codification/proclamations/05928.html#:~:text=The%20territorial%20sea%20of%20the,as%20to%20its%20bed%20and

economically exploit a territorial area to claim possession of it (Clanton, 2008)[25]. The decision did not allow the right to create a sovereign state to persons, who act as agents of the US state and dealt with the same arguments. Specifically, the court decided that:

"(…) these reefs were not islands in the legal sense of the term (Clanton, 2008)[26], but were part of the seabed, that is, the Continental Shelf of the United States, as defined by the Outer Continental Shelf Lands Act, and at the international level by the Convention on the Continental Shelf, 1958 (…) the fact that the Continental Shelf is not a sovereign territory of the United States, these activities on the reefs constituted a violation of the rights of the state over its natural resources[27] (…) citing the Rivers and Harbors Act, 1899, it decided that the construction of a TII without prior authorization from the competent public body is illegal (…)"[28].

Another case was the North and South Minerva Reefs which are located in the Pacific Ocean and 315nm southwest of the island nation of Tonga (Menefee, 1994).

In the summer of 1971 the Ocean Life Research Foundation began work on creating a TII in the shallows which had

25According to Clanton: "(…) by the law of nations, recognized by all civilized states, dominion of new territory may be acquired by discovery and occupation, as well as by cession or conquest; and when citizens or subjects of one nation, in its name, and by authority or with its assent, take and hold actual, continuous and useful possession (...) of territory unoccupied by any other government or its citizens, the nation to which they belong may exercise such jurisdiction and for such period as it sees fit over territory so acquired (...)".

26"(…) the district court observed that an "island" is defined as a naturally formed area of land surrounded by water, which is above mean high water (…)", staying close to the definition of the Convention on the coastal Zone and the Contiguous Zone (…)".

27"(…) courts concluded that although the United States has no sovereign ownership over the reefs claimed by Ray and Anderson, the men were interfering with the government's monopoly rights to control the environmental management of the international continental shelf (…)".

28Law of the Sea. Continental Shelf. Government Approval is Required for Construction of Artificial-Island Nations off the Coast of Florida.

commercial activities and hosted residences.

In 1972 the Declaration of Sovereignty of the independent state of the Republic of Minerva was issued, which sought the general recognition of the international community (Menefee, 1994)[29], but without any concrete success.

The neighboring states and mainly Tonga began to react and not recognize the claim of sovereignty as an unchanging position (Menefee, 1994).

Tonga began to take actions of sovereignty after the declaration of the South Pacific Forum (Brown Pulu, 2014) followed later in time by the de jure declaration of sovereignty over the shallows (Findlay, 2013)[30], which was carried out through the Royal Decree on 15 June 1972[31].

29"(…) Minerva's founders dispatched letters to some one hundred countries seeking recognition, with disappointing results. The only full diplomatic relation established has been with the tiny Sultanate of Ocussi-Ambeno, on the island of Timor in the Malay Archipelago (…)".

30Kingdom of Tonga, A Partial Submission of Data and Information on the Outer Limits of the Continental Shelf of the Kingdom of Tonga in the Western Part of the Lau-Colville Ridge Pursuant to Part VI of And Annex II to the United Nations Convention on the Law of the Sea, Executive Summary, Submission to the Commission on the Limits of the Continental Shelf through the Secretary-General of the United Nations, April 2014, 1ss: "(…) Royal Proclamation issued by His Majesty George Tubou, King of Tonga, on 24 August 1887 claims national jurisdiction by the Kingdom of Tonga over 'all, islands, rocks, reefs, foreshores and waters lying between the fifteenth and twenty-third and a half degrees of south latitude and between the one hundred and seventy-third and the one hundred and seventy-seventh degrees of west longitude from the Meridian of Greenwich (…)".

31Kingdom of Tonga, A Partial Submission of Data and Information on the Outer Limits of the Continental Shelf of the Kingdom of Tonga in the Western Part of the Lau-Colville Ridge Pursuant to Part VI of And Annex II to the United Nations Convention on the Law of the Sea, Executive Summary, op. cit., 4ss: "(…) the Reefs known as North Minerva Reef and South Minerva Reef have long served as fishing grounds for the Tongan people and have long been regarded as belonging to the Kingdom of Tonga has now created on these Reefs islands known as Teleki Tokelau

By mid-1973 the efforts for the Republic of Minerva were already considered a failure without any further efforts from the Tongan side. An attempt to recapture the Minerva Reefs was made in 1982 which was repelled by the Tongan armed forces (Brown Pulu, 2014).

The specific reefs in our days have to do with the Fiji Islands (Buchholz, 1987)[32], while Tonga has installed the relevant navigational aids that patrol the strategic area (Strauss, 1999)[33].

As for Isola delle Rose, in 1967 the Italian citizen Giorgio Rosa, as engineer, created an installation at a distance of about 6.8 nm from the coast where the city of Rimini, Italy was located. This is an area where he hosted a bar, a restaurant, a post office, a bank that was open to the public.

The failure to obtain permission from the Italian state led to the declaration of a state on 1st May 1968, resorting to the State Council to prevent the demolition of the installation, arguing that the Convention on the High Seas granted states and individuals the right to free use of the high seas. Specifically, the

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and Teleki Tonga; and whereas it is expedient that we should now confirm the rights of the Kingdom of Tonga to these islands; therefore we do hereby affirm and proclaim that the islands, rocks, reefs, foreshores and waters lying within a radius of twelve miles [19.31 km] thereof are part of our Kingdom of Tonga (…)".

32Buchholz affirmed that: "(…) these islands as the basis for the appreciation of equidistant lines with neighboring states, Tonga will gain approximately 194.000 square kilometers of sea area, and Fiji will lose 64.000 square kilometers. Additionally, the maritime law borders of Tonga and New Zealand will touch (…)".

33Principality of Sealand: Showdown between Tonga and Fiji looms, 13/06/2011: http://www.pina.com.fj/?p=pacnews&m=read&o=5828983814df52e86649ecda4d1927

court relied on the Convention on the High Seas and on customary rules of the law of the sea (Menefee, 1994), ruling that:

"(...) the freedoms of the high seas are granted only to states where they have international responsibility and whose citizens violate or obstruct them, as well as that Italy holds sovereign rights to explore and exploit the resources of the continental shelf (...) the demolition of the installation was carried out on 25 June 1968 (...) a structure which still exists, mainly due to the refusal of the Great Britain to address the issue; it is perhaps the only case of an attempt to create a state on TII that came very close to official recognition by sovereign states (Menefee, 1994) and; it is the only entity that claims to have received even indirect (de facto) recognition by two sovereign states (…)" (Menefee, 1994; Balloun, 2011-2012).

Most of the cases we have seen so far and from the history of TIIs have to do with maritime areas located near the USA and are associated with commercial investments. This means that the establishment of the state was not of primary importance (Menefee, 1994)[34].

As for the cases of Sealand and the Republic of Minerva, beyond securing resources for economic activities, they give weight to the creation of states where the licensing of coastal states is linked to the denial of ideas for the creation of states. The choice of technical and economic constraints concerns the viability of investment plans given that natural and legal persons are linked to the creation of a state (Oppenheim, 1981)[35] and it is

34We speak about the cases: Atlantis, Grand Capri and the US the cases: Abalonia and Taluga.

35"(…) States only and exclusively are subjects of the Law of Nations, it is obvious that, as far as the Law of Nations is concerned, states solely can acquire state territory. But the acquisition of territory by an existing state and member of the Family of Nations must not be confounded, first, with the foundation of a new state, and, secondly, with the acquisition of such territory and sovereignty over it by private

not possible for a state to be created on a non-physical territory (Wong, 2013)[36], where the legal concerns of coastal states had not challenged the intentions and the obstruction of the freedom of the high seas and the enjoyment of sovereign rights on the continental shelf.

As for the continental shelf, this is a case of overlapping jurisdiction, given that the 1958 Convention on the Continental Shelf does not concern the regulation of other rights with activities in the specific zone.

The expansion of coastal states is associated with the activities of TIIs within zones of economic interest. In recent years, we have not seen many attempts to create states within TIIs since the institutional framework is certainly stricter, than the practical states. These are choices that have to do with state formations, that would host individuals, who voluntarily wish to reside in

individuals or corporations as lies outside the dominion of the Law of Nations (…) different is the case in which a private individual or a corporation acquires land with sovereignty over it in countries which are not under the territorial supremacy of a member of the Family of Nations. The actual proceeding in all such cases is that all such acquisition is made either by occupation of hitherto uninhabited land, for instance an island, or by cession from a native tribe living on the land. Acquisition of territory and sovereignty thereon in such cases takes place outside the dominion of the Law of Nations, and the rules of this law, therefore, cannot be applied. If the individual or corporation which has made the acquisition requires protection by the Law of Nations, they must either declare a new state to be in existence and ask for its recognition by the Powers, as in the case of the former Congo Free State, or they must ask a member of the Family of Nations to acknowledge the acquisition as made on its behalf (…)".

36According to a relevant decision of the Administrative Court of Cologne in the case Re Duchy of Sealand (https://www.uniset.ca/naty/80ILR683.htm): "(...) structures which make use of a specific piece of the earth's surface can be recognized as state territory (...)".

the maritime space, and in this way replace and substitute the disappearing states as well as the diminishing ones.

A special milestone in the history of TII was the creation of the Seasteading Institute in 2008, which had as its ultimate goal to build and create communities that would be based in the marine space[37]. This phenomenon is of interest because it has a broader connotation, i.e. economic, political, technical and legal (Hoogendoorn, 2010; Taylor, 2010; Hickman, 2012). Its design has to do with the creation of a state in the open sea as well as the creation of an installation such as the Floating City Project within an EEZ for technical and legal reasons[38].

We can say that the stages of evolution of TIIs comprise those of a small size that have to do with internal waters and the needs of the host states; a semi/autonomous size of a structure that is connected to the coastal zone and can cover certain needs; as well as the autonomous one, which is a structure that hosts up to 15,000 residents in the open sea and covers all of its needs (Czapiewska and others, 2013).

Of particular importance are the TIIs that have to do even at a

37 http://www.seasteading.org/

38 "(…) Seasteading Institute has looked to international waters for the freedom to establish new nations and spur competitive governance from the outside. However, there are several reasons we are now seeking a host nation: a) It is less expensive to engineer a seastead for relatively calm, shallow waters compared with the open ocean outside of territorial waters; b) it will be easier for residents to travel to and from the seastead, as well as to acquire goods and services from existing supply chains; and c) a host nation will provide a place for a floating city within the existing international legal framework, with the associate protections and responsibilities (…)". Floating City Project: http://www.seasteading.org/floating-city-project/

theoretical level with diminishing and disappearing states regarding a jurisdiction where states can license, place in structures, where they will disappear if they are challenged through an administrative, legal possibility for rights in the maritime space.

According to this theory, methodology, we can propose the recognition of historical titles associated with the EEZ and the overlying waters of the territory, the recognition of governments, the loss of the rights of state rights and peoples, where the recognition of territorial sovereignty concerns the full, limited use of the new TII, where the historical waters on the high seas are recorded.

Coastal states are concerned with the creation of TII within zones of national jurisdiction and with the prohibition of being able to appropriate various parts located on the high seas and on the international seabed, as the options are particularly limited. In this context, as analogous solutions, we can mention the creation of a TII through zones of special jurisdiction of a third state after the hospitality agreement, as well as the creation of a TII that is in connection with the territories of third countries or res nullius, as well as finally the creation of a TII through waters in a submerged area and the recognition of a state entity with an autonomous character, as happened in the case of Malta.

In practice, the construction of an expanse of artificial islands,

mainly in the Persian Gulf, is associated with a feasible mass human survival in the maritime space (Salahuddin, 2006; Dadandish, Rahanavard, 2013)[39].

Within the framework of the ILC, technical islands refer to a subcategory. In fact, according to Special Rapporteur Francois, six subcategories would have been included on the status of islands[40], and concern those:

"(…) were built on piles erected in the sea and groups which constituted villages (…) or whether these should be considered technical installations without being entitled to a territorial sea (Liakopoulos, 2020b)[41] (…) such constructions did not need any special treatment, since they were located within the Zones of National Sovereignty of the Coastal States (…)" (Granbom, 2005; Supin, 2007)[42].

According to Cordova's view on this subject:

"(…) artificial islands necessary for the exploitation of a continental shelf might also include dwellings. Under the last sentence of article 11 many states could only too easily widen their territorial sea unreasonably by building a few houses on piles (…) the fear of the spread of pockets of national sovereignty in various parts of the maritime space (…)".

As a common denominator over time, the recognition of a permanent residence in the maritime space remains where the Convention on the Territorial Zone and the Contiguous Zone had to do with a provision where TII would be particularly

39We refer to Palm Jebel Ali, Palm Jumeirah, The Word, Palm Deira, Maritime City, Nujoom Island, Saraya Islands and in the United Arab Emirates, The Wave, in Oman, Amwaj Islands, in Bahrain and The Pearl-Qatar.

40Where it has to do with natural islands, artificial islands, islands with lighthouses on top of them, lighthouses with lighthouses and technical facilities for further exploration and exploitation of the seabed.

41International Law Commission, Yearbook of the International Law Commission 1954, vol I, United Nations Publication, New York, 1960, 92ss.

42It is an idea that comes from Indonesia and from the nomadic populations that spend most of their lives in houses that have been built over the sea. The ultimate goal is to shield security from threats.

widespread in our days, something that does not happen particularly in practice.

The technical form of decommissioning in relation to the safety and protection of the TII space at sea

When we talk about a decommissioning phase, we mean a life cycle where within a TII it has to do in a self-evident way with TII use processes, such as land reclamation, coastal protection, the permanence of structures and installations, where at a local and temporal level they serve the purpose for which they were built but there is no reason for their continuation. In this way we are dealing with the end of life of a TII, where there can be no other entity and the complete degradation of a significant state of deconstruction, where the business life can serve the purpose that has been constructed and the economic, environmental, social, legal reasons, where the TII cannot decommission the international rules and standards.

The TII are connected to the marine space and the atmosphere. The TII are excluded on a long-term level (Mavrogenis, Kelman, 2013)[43], when they cease to be useful. Decommissioning has to do with negative consequences, that

43These are incidents of bad or illegal practices where their purpose is to serve the purpose of creating abandonment without control and maintenance. There is no mention of mandatory decommissioning in these cases although there have been unsuccessful projects such as on the Hihifo coast and the related Ha'pai complex in Tonga which had disintegrated.

arise beyond the use of a TII in a marine environment, where biodiversity, the potential of organic farming, concerns the legitimate use of marine space.

Decommissioning has often been transformed into a field of research and exploration for the exploitation of hydrocarbons that had been placed in the wake of offshore mining reaching the end of their relevant use (Ayoade, 2002), particularly after the installation of the Brent Spar (McIntyre, 1995; Side, 1997)[44]. This is a parameter that has to do with flexible constructions from the design phase and the requirements for a safe decommissioning.

Decommissioning is subject to the law from the moment when states license and have under their jurisdiction the TII and the persons who own and use the TII. The specific individuals have the obligation to carry out and decide on the appropriate decommissioning.

States have the legal framework regarding the procedures that intervene with the operators that bring international responsibility in the event that a wrongful decommissioning has as an international impact. The role of individuals is not of decisive importance and is magnified in case a larger number of

44The Brent Spar hydrocarbon reservoir has been active for 15 years within the British Continental Shelf. If the operation stopped to a greater extent there were reactions from the environmental movement of the North Sea area. The reactions brought about changes in the methods and specifications of the decommissioning of IEDs at the regional level.

TIIs operate the exploitation of hydrocarbons (Gibson, 2002; Ayoade, 2002; Parenete, Ferreira, Moutinho dos Santos, Luczynksi, 2006)[45].

The nature of modern TIIs and the use of marine space is a factor that deals with TII owners, who utilize and ensure the lifespan at a lower cost for the decommissioning of a TII that has more to do with the installations and less with the artificial islands.

When we talk about decommissioning and technical installations we are dealing with superstructure/topside, platform/deck, legs, pillars, cables and foundations/pilles that are connected to fixed and semi-fixed installations.

The use ends in three stages which concern (Day, 2005) cessation[46], i.e. the end of operation which can be planned but also unforeseen after some natural disaster. If the decommissioning is planned the process is specific and has to do with technical studies, and the preparation of the contractor and the consortium, where the contractual obligations will be selected.

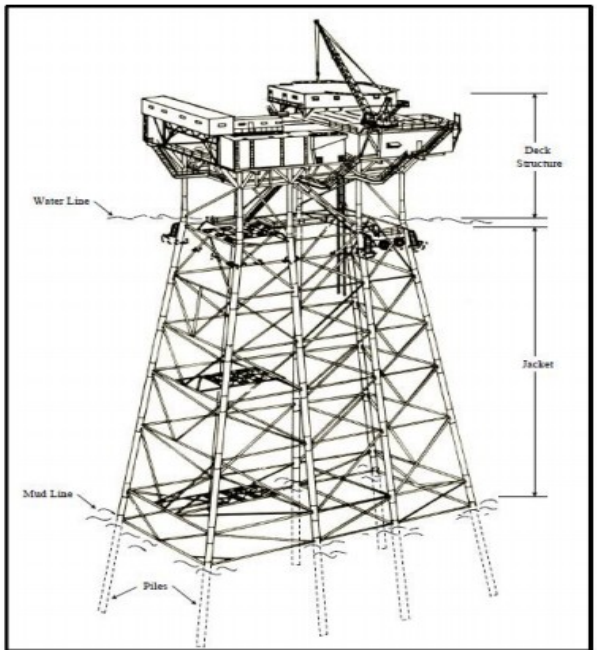
The pause does not necessarily mean the end of a TII because it can be moved, as well as used within the function at a point

45The lack of a list of all TIIs at the global level results in the exact number of TIIs being in operation and determined since worldwide use and decommissioning affects the supply and demand of hydrocarbons.

46Committee on Disposition of Offshore Platforms, Marine Board, Commission on Engineering and Technical Systems, National Research Council, Disposal of Offshore Platforms, National Academy Press, Washington DC, 1985.

where conditions may allow it.

Fig. 14: Jacket Structure



Source: Minerals Management Service, *Explosive Removal of Offshore Structures, Information Synthesis Report*, OCS Study MMS 2003-070, March 2004, p. 16.

Decommissioning is a sub-stage that has to do with the dismantling, relocation, disposal of the TII and the relative restoration of the abandoned space, if the structure has been dismantled or disconnected from the seabed. Then we have some specific options that concern relocation, reuse, different

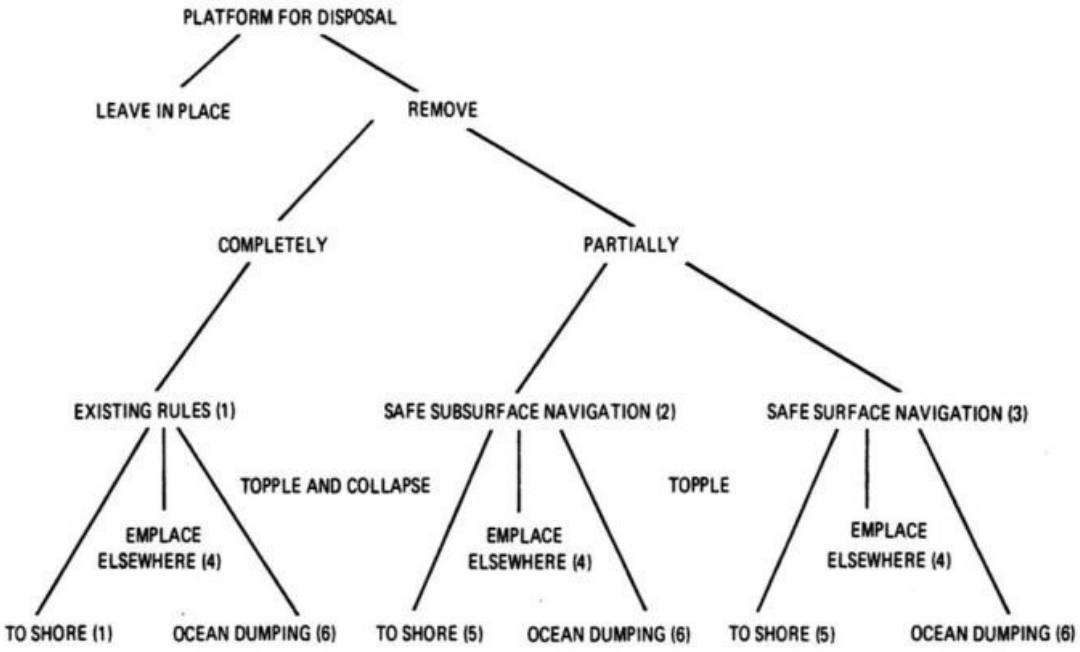
use, withdrawal from a safe place and storage, continuing with withdrawal from land and dismantling, disposal at great depths as well as the possibility of conversion into an artificial reef, where the reserve capacity is only for future use.

Specifically, displacement concerns the construction as a whole, where after partial and total removal the remaining state is associated with the presence that ensures gradual dismantling and difficulties where displacement concerns the new use but not the final dismantling (Macreadie, Fowler, Booth, 2011).

Semi-fixed are associated with species that are related to fixed installations and are easily displaced in the displacement process, where site clearance is removed from waste, waste operations and the operation of TII.

Finally, the removal of other mechanisms and infrastructures on the seabed deals with the environment, biodiversity disturbance, safe performance of the space and other uses.

Fig. 15:Options during the Construction Decommissioning Stage



Source: Committee on Disposition of Offshore Platforms, Marine Board, Commission on Engineering and Technical Systems, National Research Council, *Disposal of Offshore Platforms*, National Academy Press, Washington DC, 1985, p.12.

Finally, abandonment has to do with processes of displacement where structures are secured and signal elements are related to maps, mechanisms for monitoring situations, such as meters of

various substances, where the continuous presence of people is a factor in a process of control and monitoring at regular intervals. Decommissioning is not an autonomous process due to technological and economic difficulties, as well as the shift towards adopting new decommissioning measures with long-term side effects, where decommissioning causes problems for users of the marine environment.

Decommissioning can cause problems for shipping, both on the surface and below the sea. In parallel, in fishing, there is a risk of destruction of fishing equipment with invisible elements, where the abandonment of infrastructure in the marine environment can be the ending of habitats for various species, mainly fish (Macdonald, 1994).

In the environment there is the presence of chemical and toxic substances. The placement of new TII and of underwater structures due to the occupation of space can cause danger in short and long period of time (Broughton, 1994; Snieckus, 2001)[47].

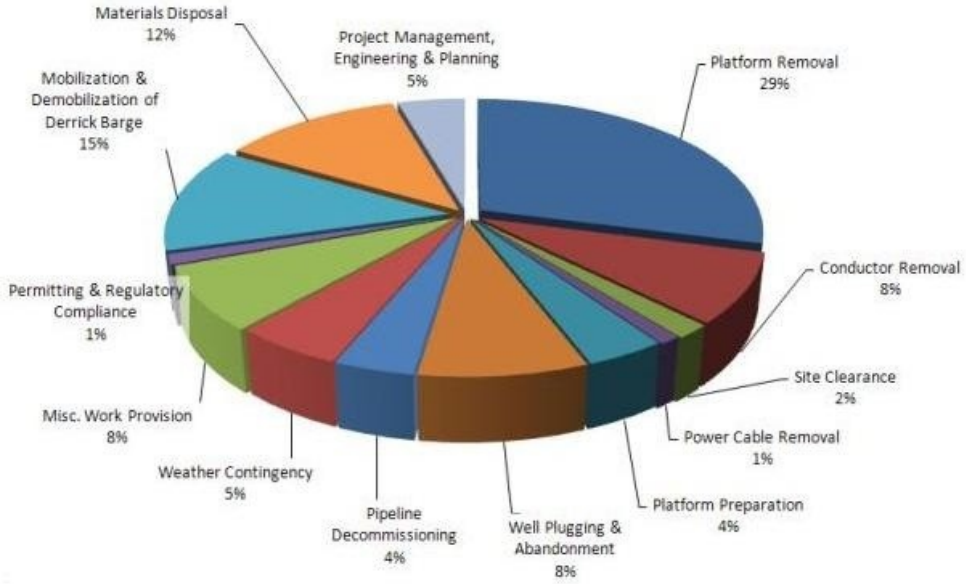
Within the decommissioning phase the user must respond to internal and external elements according to legal commitments

47We are talking about a decommissioning sub-stage where the construction and technical preparations have to do with the suspension of operation and the planning of the decommissioning which are long-term and have a duration of several years. The long-term decommissioning is also what has to do with the Maureen Platform, which operated from 1983 to 1999 in the North Sea and mainly in Great Britain. The relevant planning had its beginning in 1993 when the Operation Stop took place in November 1999 and the relative complete removal of the Facility had a relatively calculable duration from February to June 2001.

and related obligations. The internal elements have to do with the cost, the artificial difficulty of the project and the construction, where the trends of economic activity are linked to the construction as well as how feasible the project is in construction, design, safe partial, complete removal and change of use. As for the external criteria, they have to do with the obstruction of other uses, where the marine space and the occurrence of an accident burden the marine environment, biodiversity due to the use of the marine space. The contractual obligations with the coastal state deal with the regional obligations that arise for the coastal state (Ayoade, 2001; Day, 2005).

In practice, decommissioning has to do with a business activity where the participation rates in decommissioning processes related to the total cost concerning the supports, systems and transportation.

Fig. 16:Decommissioning Cost Sharing



Source:PROSERV, *Decommissioning Cost Update for Removing Pacific OCS Region Offshore Oil and Gas Facilities*, Volume 1, Study for the U.S. Department of the Interior, Minerals Management Service January 2010, pag. iv.

If decommissioning is not planned properly then the cost will exceed the creation of the TII. Therefore, the cost is significantly reduced for the structure that is recycled and reused[48].

48"(…) estimates indicate that the cost of some removals may exceed the cost of the original installation (…)".

Decommissioning has to do with the contribution to the safety of navigation and with the decommissioned TII in the form of aircraft and ships, in shelters and emergencies[49], in anchorages, in conversion to artificial reefs, in environmental restoration of the seabed around the TII and the removal of foreign and harmful elements by proposing the concession of abandoned TII to owners and non-profit organizations for exploitation and research.

Brown states that:

"(…) the rights of states on the continental shelf are rather temporary in nature and constitute, in a way, exceptions to some aspects of the freedoms of the high seas (Brown, 1982)[50] (…). States have the right to occupy areas in order to exercise their rights of exploration and exploitation but at the same time they do not have the right to possess or appropriate them (…)"[51].

As for the ILC, it did not deal with the issue of decommissioning despite the proposal of Great Britain from 1956, which was adopted by UNCLOS (Peters, Soons, Zima,

49Committee on Disposition of Offshore Platforms, Marine Board, Commission on Engineering and Technical Systems, National Research Council, Disposal of Offshore Platforms. National Academics Press, Washington, 1985, 58-59: https://nap.nationalacademies.org/initiative/committee-on-disposition-of-offshore-platforms

50Art. 5, par. 5 of the Geneva Convention on the Continental Shelf, affirms: "(…) provision of the Geneva Convention (…) is a reflection of this same need to treat the coastal State's rights in the continental shelf as a temporary exception to the freedom of the high seas and one which, both during the exploitation of the shelf and thereafter, will not interfere unjustifiably with other users of the area (…)".

51Continental Shelf but also the bottom of the Exclusive Economic Zone, Art. 77, par. 3 UNCLOS states "(...) rights of the coastal state over the continental shelf do not depend on occupation, effective or notional (…)". In parallel, the TII have to do with the use, re-use within the EEZ, where it provides the right to the coastal state to continue its presence after the cessation of operation and the continental shelf within an abandoned TII, which will essentially hinder freedom on the high seas in accordance with article 89 which also states that: "(...) no state may validly purport to subject any part of the high seas to its sovereignty (...)".

1984)[52]. It specifically requested:

"(…) installations that are abandoned or disused must be entirely removed (…)".

In practice, the proposal of Pakistan (Peters, Soons, Zima, 1984) was adopted regarding the interest of states in the creation of facilities for the exploitation of natural resources and for the protection of the environment and for other uses. The TIIs had a limited size for placement at shallow depths and the possibilities of restrictions on the decommissioning process over time.

The legal regime for decommissioning has to do with Art. 60, para. 3 UNCLOS which clarifies the displacement[53].

The coastal state has the right for the complete, partial removal as an option of the unusability and construction, which affects navigation, fisheries, the marine environment and the obligations from and to third states. Therefore, the use of freedom remains in secondary place since the abuse of concession has to do with specifications.

The safety of navigation obliges the states to proceed with appropriate procedures according to the level, location, and the structures that remain. Removal concerns the recognition of the rejection of the structures where the cost is small (Peters, Soons, Zima, 1984).

52Peters and others affirmed that: "(…) such installations are abandoned or disused, they are to be removed entirely (…)".

53See Art. 210 and 1, par. 1, lett. 5, II UNCLOS.

Articles 60 and 80 on decommissioning and cases of EEZ and continental shelf deal with internal waters, the territorial sea and the high seas (Freestone, 2011)[54].

Finally, the decommissioning framework is particularly general and weakened for the use and protection of the environment. The partial removal has elements for the assessment of risk and the economic cost that combines the spatial scope it refers to, the investigation of the reference field, the increase in complexity and the difficulties that led to the adoption of the entire framework through provisions relating to artificial islands and installations.

The Decision A. 672(16) of the International Maritime Organization entitled "Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone" adopted

54In par. 21 affirms that: "(…) the event of termination or expiration of this contract, the Contractor shall comply with the Regulations and shall remove all installations, plant, equipment and materials in the exploration area and shall make the area safe so as not to constitute a danger to persons, shipping or to the marine environment (…)". ISBA/19/C/17, Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters, 2013: https://www.isa.org.jm/wp-content/uploads/2022/04/isba-19c-17_0-2.pdf.
ISBA/16/A/12 REV. 1, Decision of the Assembly of the International Seabed Authority relating to the regulations on prospecting and exploration for polymetallic sulphides in the Area. 2010: https://www.isa.org.jm/wp-content/uploads/2022/04/isba-16a-12rev1_0.pdf. ISBA/18/A/11, Decision of the Assembly of the International Seabed Authority relating to the Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area, 2012: https://www.isa.org.jm/wp-content/uploads/2022/04/isba-18a-11_0.pdf. See also from the ITLOS: Responsibilities and obligations of states sponsoring persons and entities with respect to activities in the area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber), 2011.

on 10 October 1989 applies to the installations of Articles 60 and 80 UNCLOS[55], as a prerequisite for their full or partial removal, calling on member states to remove installations, where:

"(…) serving the primary purpose for which it was originally designed and installed, or serving a subsequent new use, or where no other reasonable justification cited in these guidelines and standards exists for allowing the installation or structure or parts thereof to remain on the sea-bed (…) a case by case evaluation (…) for the adoption of partial or complete removal, which must however respect the criteria and specifications set, with the aim of avoiding fragmentation of the practice of states (…)".

The main criteria relate to the impacts on shipping, the marine environment and resources, the risk of displacement and construction, the cost, feasibility and personnel involved, as well as the reuse in a new installation. These are criteria that are of a general nature from other contractual and non-contractual texts, where if they exceed 100m in depth they can be completely removed with specific exceptions[56].

The international navigation straits of archipelagic routes as well as shipping routes and deep-sea vessels also have to do with the coastal state, which will now be the competent party for the maintenance of navigation, the monitoring of the installation and its abandonment through the property titles and the related

55Wegelein affirms that: "(...) 1982 UNLOS Convention leaves it essentially to the coastal state to decide whether or not research installations must be removed; Art. 60(3) of the 1982 UNLOS Convention suggests that the coastal state take into account generally accepted international standards. The Removal Guidelines do not restrict that discretion but only provide criteria for the decision whether to have the installation removed or not and what measures are to be taken in terms of safety of navigation in either case (…)".

56Par. 3.1 and 3.2 of the Annex to Decision 672(16).

responsibilities[57].

Finally, Gao and Esmaeili consider that the decommissioning framework has positive results on the more general legal balance of the TII (Gao, 1997; Esmaeili, 2001).

As a negative criticism is the safety of navigation where the relevant decision through UNCLOS and the protection of the marine environment (Rosenne, 1999; Esmaeili, 2001) has to do with the application of measures on a global scale with installations, where the conditions are at a relative distance (Gao, 1997), as well as towards the end of the relevant use where the final decision states that "no installation or structure should be placed".

Concluding remarks

The present study aimed to shed light, starting from UNCLOS, on issues of international law of the sea concerning artificial islands and installations within a specific legal framework and through a multitude of problems that encompass the methodology of several related issues (Esmaeili, 2001).

The methodology used was based on international law in a selective manner and not at a national level, trying to demonstrate that TIIs have enough elements to operate within a

57According to the party responsible it was declared that. "(…) any juridical or physical person identified by the coastal state for a purpose mentioned in the above paragraph 3.10 (…)".

specific space, along with rights and several obligations.

The questions are many. They have to do with the change processes without violating the relevant legislation, to cover all cases in a precise manner, the possibility of a uniform legal regime and to respect customary rules, the sequence of technological evolution and the effective application on the TII, the technical parameters to be applied in an economic and easy process for the creation, maintenance of the rules, which have to do with the TII and to function equivalently as natural islands trying to exploit the natural resources, the national sovereignty within the territorial sea and in internal waters, where the continental shelf has no relation to the TII, leaving room for further research regarding the legality of the activities and initiatives of the states according to the needs of each case.

Space, location, licensing, use, operation were aspects that had to do with activity in the maritime space but also with the practice of issues within the international community where specialization, deepening of technical issues are scattered at various points in UNCLOS, where they concern the TII regardless of the space and use to which they are limited.

UNCLOS is not a perfect convention like all legal texts that will adapt over time according to the needs and the thematic range that has to do with the TII within margins for regulations that serve the TII and the related use.

The legal framework is not perfect and does not fully cover the functioning of the TII as we have seen so far since the challenges particularly through the reduction, disappearance, creation of new territories related to issues where in the near future the creation of a new framework is an open possibility with initiatives that must be taken.

The purpose of TII is the continued use and presence in a marine space, as well as the relative obstruction as a levee on land, protecting every form of environment and biodiversity as a primary priority of humanity.

The open issues raised and we can understand from the previous paragraphs are still open. Initially, the registration and licensing of TIIs have to do with nationality and construction within the zone of national jurisdiction but it still remains open as far as the international seabed and areas beyond national jurisdiction are concerned.

Licensing is self-evident for the registration and relocation of an installation. The usual procedure concerns the registration of installations in the registers of ships by keeping a separate register for the installations without any relevant and specific procedure. There is no single catalog of TIIs in use and under development based on a single legal regime for their development and dissemination.

Installations can also be considered as ships with several arguments but also with a legal status, where the specific use such as drilling rigs and with two categories of installations as ships and non-ships, can be addressed through UNCLOS.

Ships also have to do with other types of constructions where their coverage cannot encompass all stages of use of TII.

Another issue has to do with safety and the width of the demarcation of the safety zones. Especially with regard to Ultra Large Crude Carriers that exceed 400 meters in length, it creates a problem in terms of mooring and waiting for installation in a place, where there is a TII and is outside the safety zone. A high-speed vessel can approach a structure, where it exceeds the outer limit of the zone.

The size and uniformity of the rules has to do with actions within the zones related to the abuse of power and licensing by the relevant state. The treatment of crimes and illegal acts related to the TII and the provisions of UNCLOS, i.e. the lack of illegal radio broadcasts, piracy, drug trafficking, lack of nationality, human and arms trafficking are cases that require the declaration and delimitation of the EEZ, the outer limit of the continental shelf.

The provisions for radio broadcasts have to do with the status of the TII and UNCLOS (Nandan, Rosenne, 1993). At a global and regional level, measures taken against illegal radio broadcasts

from installations[58] have also included ships in accordance with the definition of "unauthorized broadcasting from the high seas"[59].

Art. 109, paragraph 1 creates a relevant regime for such incidents. Illegal radio emissions are related to:

"(…) a) the flag state of the ship, b) the state of the licensed installation, c) the state of the person's nationality, d) the state in whose territory the emissions are received and e) the state whose radiocommunications are subject to interference (…)".

In parallel, Art. 110 defines as the competence of the relevant states that have to do with universal jurisdiction and as it appears through the EEZ or the continental shelf, i.e. the jurisdiction that the coastal state has on the basis of Art. 60, paragraph 1, lett. b) and c). In parallel, the violation for a state to have the right to proceed with the arrest of natural persons, where the seizure of an installation in accordance with Art. 109, par. 4 UNCLOS means for third states the notification of the competent states within the framework of the obligation of cooperation.

The shielding efforts that may cover the TII mainly address illegal acts that have to do with the continental shelf, leaving a gap in areas that concern extra-national jurisdiction[60], however,

58I.T.U. Regulations, 1959 as well as the European Agreement for the Prevention of Broadcasts Transmitted from Stations Outside National Territories, 1965 had a discretionary power to take measures against fixed installations.

59Article 109, parr. 1-2: "(…) the purposes of this Convention, 'unauthorized broadcasting' means the transmission of sound radio or television broadcasts from a ship or installation on the high seas intended for reception by the general public contrary to international regulations (…)".

60Protocol for the Suppression of Unlawful Acts against the Safety of Fixed

still allowing certain gaps such as the framework for protection for illegal acts originating from the TII and the high seas and the framework for addressing illegal acts originating from zones of economic interest, such as armed attacks, terrorist acts, illegal activities, where a unified international and European framework is an imperative need.

The issue of decommissioning of TIIs, at a regional level (Ayoade, 2002), has to do with environmental dumping, where maritime regions have greater burdens from an economic perspective in order to become more attractive.

The lack of uniform rules and the degradation of some areas where the relevant legislation is not applied deals with the protection of the environment mainly where marine pollution, exploration and exploitation of natural resources concern the TII, such as the exploitation of resources on the seabed of the continental shelf and the EEZ according to Art. 208, the pollution related to the exploration and exploitation of natural resources on the international seabed according to Art. 209, as well as the dumping of waste according to Art. 210.

Platforms Located on the Continental Shelf, 1988: https://treaties.un.org/doc/db/Terrorism/Conv9-english.pdf and Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf, 2005: https://www.refworld.org/legal/agreements/imo/2005/en/66622 . Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation 1988: https://www.imo.org/en/About/Conventions/Pages/SUA-Treaties.aspx

Articles and obligations arising from UNCLOS, where the protection of the TII also involves other uses of the marine space and pollution, where they exacerbate the problem and must be taken into account preventive and remedial measures.

As individual regulatory functions, they are the monitoring of the implementation of rules regarding the coastal state, the responsibility of the international community and the coherence of a legal framework, under the opinion of the relevant rights in the maritime space, where technical issues are involved and several measures are taken at different levels of protection and not.

The challenges for the life cycle of TII are linked to proposals for the continuous improvement of the regime, where rational planning and continuous information have to do with the operation of TII. The provisions within the scope of fisheries, research and exploitation for hydrocarbons and shipping in the maritime space are directions that must be regulated through the principle 27 on cooperation and the principle of good neighborliness as included in Art. 74, of the Chapter of the UN (Sands, 2003).

The continuous transfer of alien species from fixed or semi-fixed installations to new uses is a form of translocation (Yeo and others, 2009), where through knowledge they are translocated to a greater extent and with appropriate measures.

The life span of an installation for a life cycle of about 20/30 years makes the structures move away from the design and use of installations, where decommissioning and the adoption of a binding text at international level provides for immediate removal. It is not such an easy assumption, mainly for the protection of the coastal area and the residual liability, which prevents users from neglecting their essential duties.

The breadth of the safety zones and the preventive measures within them are important for accidents (Esmaeili, 2001), where the responsibilities provided for in UNCLOS are ineffective (Harel, 2012).

Pursuits through safety zones and the consequences of the prohibition of passage without prior authorization have to do with the coastal state. The possibilities of exercising for valuable actions are zero and the imposition of penalties for offenses and for the handling of TII is a continuous pursuit, where the transmission of information has to do with the pursuit of the state vessel (Allen, 1989).

Incidents of violence and criminal acts within zones of national sovereignty (Kashubsky, 2013)[61], as well as incidents of threats

61Kashubsky affirmed that: "UNCLOS does not expressly allow coastal states and other states to take enforcement action against foreign ships involved in the attacks on or unlawful interferences with offshore petroleum installations in the EEZ or the high seas, which is a significant limitation in the international regulatory framework (…) other states and the principle of the exclusive flag state jurisdiction appear to be well protected and respected under the UNCLOS framework, which makes it more difficult for coastal states to take enforcement actions against foreign ships involved in attacks on and unlawful interferences with offshore installations

in the TII (Kashubsky, 2016) demonstrate that the weakness of a unified legal regime is a necessity at the international level, as is the taking of unilateral measures both in terms of legal status and from a technical perspective.

In the future, Very Large Floating Structures (Wang, Tay, 2011)[62] will attempt to combine the extension and stability of AI through land reclamation, where extension has negative impacts on the marine environment, biodiversity and coastal engineering.

The ongoing evolution has to do with a regulatory stage that monitors technological progress (MacDonald, Mitsuyasu, 2000) and energy production, where the exploitation of hydrocarbons is linked to renewable sources, such as solar, wave, thermal, tidal, wind, as sources of the immediate future and in the use of land and sea.

The technical characteristics also give rise to other uses of the marine space, where the environmental and biodiversity burdens concern the coastal state and the specific technical rules for the use and the natural environment.

outside of the territorial sea (…)".

62Wang and Tay affirmed that: "(…) artificially man-made floating land parcels on the sea. They appear like giant plates resting on the sea surface. VLFS may be broadly categorized into the semisubmersible-type and the pontoon-type. The semisubmersible-type VLFS has a raised platform above sea level by using column tubes and is suitable for deployment in high seas with large waves. In contrast, the pontoon-type VLFS platform rests on the water surface and is intended for deployment in calm waters such as in a cove, a lagoon or a harbor (…)".

The specific uses of an institutional framework and its mixed use refers to specific uses and the relative failure to regulate parameters in case the TII have a different object.

Thus, a framework emerges that has two speeds. On the one hand, the economic activities within the EEZ, where several issues come up for regulation, and on the other, the uses that have to do with regulations at the international level and sometimes at the national level. The operation of the TIIs has mixed uses allowing the storage of natural gas for wind turbines and energy production with the question in this case to be, which of the two institutional frameworks will exist?

And in this case, illegal activities continue to be a real danger with the classic form and the forms where the assistance of new information and communication technologies has to do with quite a bit of hesitation from the coastal states and in accordance with national jurisdiction. Illegal activities have impacts on neighboring and coastal states and must be addressed in the best way as well as prevented for the foreseeable future.

Practical applications in combination with natural phenomena are a difficult situation since sea level and coastal erosion are in use with TII. Unsuccessful attempts at shielding along coastlines and national inadequacy through lack of specialized know-how, low budget, poor planning cannot fulfill the purpose and burdens on coastal and non-state biodiversity. Avoiding such

adverse events and the consequences according to decommissioning specifications concern specific purposes, where further dangers are hidden.

We need commitments for TII and above all a concrete regulation for the issue of delimitation that exist in too many contracts as content but with diverse form. A specific attempt for further definition has to do with the field, where the technological and industrial scientific community must undertake a framework that is operational and does not pose obstacles to the future development of TII.

The registry should include an international global list for TII with a strong operational character, a list that will include all TII as well as the relevant use and decommissioning system. An international list with all relevant information, which deals with the license, registration, exact location, territorial dimensions, description of the use, the width and regulation of the security zone, measures of protection from local crimes, etc.

A regime of uniformity at the international level for TIIs is required to ensure the concepts and members of the international community, so as to ensure future homogeneity of TII rules. The grouping of issues, navigation safety, protection of TII, decommissioning, the marine environment, biodiversity, non-commercial use constitutes the basis for the recognition of rights in declining and disappearing states, where the exploitation of

TII has to do with the disappearance or not of the territories as well as the explicit, clear legal status of TII and the law of the sea, as basic concepts of international law, where the taking of the initiative combines the discussion of rights, obligations that are part of a more general resolution of the issue. TII do not have a specific framework mature from a legal perspective. Finally, a comprehensive and unique institutional framework is needed, where the option for adopting a homogenous regime at the regional and international level of rules and regulations that ensure the coherence of the regime and its relative functionality over time, is more feasible.

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